

PFAS Sampling Report

TRC - Methanex Sites

PFAS Sampling Report

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Client: Taranaki Regional Council

Co No.: N/A

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1.0 Introduction

This report has been prepared for Taranaki Regional Council (TRC) by AECOM New Zealand Limited (AECOM) in accordance with the proposal dated 11 July 2018. It documents sampling for per- and poly-fluoroalkyl substances (PFAS) undertaken from 21 to 23 August 2018 which comprised sampling of groundwater from selected monitoring wells at the following Methanex New Zealand Limited (Methanex) sites (the Sites): Motunui, Waitara Valley, Omata Tank Farms 1 and 2, and Port Taranaki.

The locations of the Sites are presented on **Figure 1**.

1.1 Objective

The objective of the sampling was to undertake an initial screen for the presence of PFAS in groundwater at the Sites.

2.0 Site Information

Location details for the Sites are summarised in **Table 1** below.

Table 1 Site Information

Site name	Sample IDs	Site address	Map reference (NZTM)
Motunui	GW21 GW22 GW31 GW33 GW37 ¹ Control01	409 Main N Rd, Motunui	1711211E, 5683566N
Waitara Valley	GW3 GW5 GW8A GW10 GW46 GW47 Control02	184 Mamaku Road, Brixton	1708069E, 5679632N
Omata Tank Farm 1	GWOM1	315 Centennial Drive, Omata	1688166E, 5675594N
Omata Tank Farm 2	GW28 GW29	251 Centennial Drive, Omata	1688179E, 56746004N
Port Taranaki tank farm	GW9AA ² GW9B	198 Breakwater Road, Port Taranaki	1689077E, 5676491N

Notes:

NZTM – New Zealand Transverse Mercator

Site layout plans for the Motunui, Waitara Valley, Omata Tank Farm and Port Taranaki Tank Farm sites are presented in **Figures 2 to 5**.

¹ Monitoring well MW41 was originally selected but was unable to be sampled as it had collapsed; well MW37 was sampled instead.

² Monitoring well 9A was under water following overnight rain and therefore inaccessible; alternative well MW9AA was sampled instead.

3.0 Field Works

3.1 Laboratory Selection

TRC engaged AsureQuality Limited (AsureQuality) to complete PFAS analysis, at their Lower Hutt laboratory. AsureQuality is an ISO17025 accredited laboratory and was the only provider of PFAS analysis in New Zealand at the time the field works were undertaken. AsureQuality's PFAS methods comply with the Heads of Environmental Protection Authorities Australia and New Zealand (HEPA) PFAS National Environmental Management Plan, January 2018 (NEMP) and the United States Department of Defence (US DOD)/Department of Energy Quality Systems Manual for Environmental Laboratories.

3.2 Scope of Work

Sampling was undertaken on 21 to 23 August 2018, and comprised:

- Volatile organic compounds (VOC) concentrations in the headspace of each monitoring well were measured immediately after opening each well prior to sampling, using a photo-ionisation detector (PID).
- The total well depth, depth to groundwater, and the presence/absence of light non-aqueous phase liquid (LNAPL) were gauged using an electronic oil-water interface probe in each of the monitoring wells.
- Prior to sampling, groundwater was purged from the monitoring wells using the 'low flow' method to minimise turbidity³. The wells were purged for 15 to 25 minutes at approximate rates of 0.1 L/m, until field screening of the extracted groundwater for pH, temperature, electrical conductivity, oxidation/reduction potential, and dissolved oxygen, indicated that these parameters had stabilised. Turbidity was also monitored during purging. Between 1.5 L and 2.5 L of groundwater was purged from each well using dedicated high-density polyethylene (HDPE) and silicone tubing. Groundwater samples were then collected by pumping groundwater from approximately 0.5 metres (m) below static water level into laboratory prepared bottles⁴. The groundwater sampling field sheets are presented in **Appendix A**.
- The bottles were placed into chilled storage bins and sent to AsureQuality under AECOM chain of custody procedures, where they were analysed for PFAS. Chain of custody documentation is provided in **Appendix B**.
- Appropriate isolation and decontamination procedures were undertaken during sampling as per AECOM PFAS sampling protocols, with special care taken to eliminate the potential for contamination of sampling equipment, materials, and water samples with PFAS. AECOM PFAS sampling protocols have been developed in accordance with US DOD⁵, United States Environmental Protection Agency (US EPA)⁶ and United States Navy⁷ guidance documents, and include the use of a two-person team for groundwater sampling ("clean hands, dirty hands") in general accordance with US EPA Method 1669⁸, where "clean hands" handle only sample bottles during sampling and "dirty hands" handle equipment.

³ Low flow purging could not be completed at well GW29 (Omata Tank Farm 2) as there was an insufficient pump tubing remaining at the end of the sampling event. Approximately 1 well volume of groundwater was purged with a PVC bailer.

⁴ A grab sample was collected by bailer from monitoring well GW29 (Omata Tank Farm 1).

⁵ Department of Defence, United States (DoD), October 2016. Bottle Selection and Other Sampling Considerations When Sampling for Per- and Poly-Fluoroalkyl Substances (PFAS).

⁶ US EPA, January 2010. USEPA Document EQASOP-GW 001, Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells, Version 3.

⁷ US Navy, September 2015. Field Sampling Protocols to Avoid Cross-contamination During Water Sampling for Perfluorinated Compounds (PFCs), Navy Guidance Document.

⁸ Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, United States Environmental Protection Agency, July 1996.

- For quality assurance/quality control (QA/QC) purposes, the following samples were collected and analysed as described:
 - Duplicate groundwater sample QAQC01, collected from monitoring well Control01 (Motunui) during 'low flow' groundwater sampling, analysed for PFAS.
 - Field blank sample QAQC02, collected by filling sample bottle with laboratory supplied Type 1 reagent water near monitoring well Control01 (Motunui), not analysed.
 - Equipment blank sample QAQC03, collected by pouring laboratory supplied Type 1 reagent water over the oil-water interface probe and into a laboratory supplied sample bottle, after decontaminating the probe upon completion of groundwater sampling at Motunui, not analysed.
 - Trip blank sample QAQC04, laboratory supplied Type 1 reagent water in sealed laboratory supplied bottle, included in the chilled storage bin prior to dispatching the groundwater samples for Motunui and Waitara Valley toASUREQuality in August 2018, analysed for PFAS.
 - Duplicate groundwater sample QAQC05, collected from monitoring well Control02 (Waitara Valley) during 'low flow' groundwater sampling, analysed for PFAS.
 - Field blank sample QAQC06, collected by filling sample bottle with laboratory supplied Type 1 reagent water near monitoring well Control02 (Waitara Valley), not analysed.
 - Equipment blank sample QAQC07, collected by pouring laboratory supplied Type 1 reagent water over the oil-water interface probe and into a laboratory supplied sample bottle, after decontaminating the probe upon completion of groundwater sampling at Waitara Valley, not analysed.
 - Duplicate groundwater sample QAQC08, collected from monitoring well GW9B (Port Taranaki) during 'low flow' groundwater sampling, analysed for PFAS.
 - Field blank sample QAQC09, collected by filling sample bottle with laboratory supplied Type 1 reagent water near monitoring well GW9B (Port Taranaki), not analysed.
 - Equipment blank sample QAQC10, collected by pouring laboratory supplied Type 1 reagent water over the oil-water interface probe and into a laboratory supplied sample bottle, after decontaminating the probe upon completion of groundwater sampling at Port Taranaki, not analysed.
- Purge water and decontamination water was containerised and relinquished into the custody of the Methanex laboratory staff.

4.0 Results

4.1 Groundwater Levels and Flow

Depth to groundwater measured during the August 2018 sampling event are presented in **Table 2**. Reduced groundwater levels are also presented for Waitara Valley, where top-of-casing (TOC) elevations were provided by TRC.

At Motunui, standing water levels ranged from 5.123 m below TOC (bTOC) at GW37 to 7.190 m bTOC at GW22.

At Omata Tank Farms 1 and 2 standing water levels ranged from 1.838 m bTOC at GWOM1 (Omata Tank Farm 1) to 9.018 m bTOC at GW29 (Omata Tank Farm 2).

At Port Taranaki, standing water levels ranged from 1.679 m bTOC at GW9B to 2.221 m bTOC at GW9AA.

At Waitara Valley, groundwater ranged between 0.999 m bTOC and 8.5 m bTOC. The inferred groundwater flow pattern based on the gauging data at Waitara Valley for August 2018 is presented in **Figure 6**. The data indicate shallow groundwater flows in a northeasterly direction towards the

Waitara River at a gradient ranging from approximately 0.03 m/m in the northern part of the site to approximately 0.05 m/m in the southern part of the site.

4.2 Field Observations

Monitoring well MW41 (Motunui) had been initially selected for sampling, but prior to the start of field works, AECOM was advised by Methanex that the well had collapsed. In its place, well MW37 (Motunui) was selected by TRC for sampling.

Monitoring well 9A (Port Taranaki), which had been initially selected for sampling, was under water following overnight rain and therefore inaccessible; alternative well MW9AA (Port Taranaki) was sampled in its place.

No foam or other visual evidence of PFAS presence was observed in groundwater during gauging, purging and sampling of any of the monitoring wells.

Headspace VOCs measured 6.3 parts per million (ppm) at monitoring well GW9AA (Port Taranaki), and an organic, marine odour was noted during gauging, purging and sampling of the well. Headspace VOCs measured in the other groundwater wells ranged from 0.0 ppm to 0.3 ppm.

The sealed wellheads were submerged in surface water accumulated in the manhole vaults at monitoring wells 9AA and 9B (Port Taranaki), and this water was bailed out prior to sampling to prevent entry of the surface water into the well. A sheen was also noted on the surface water in the manhole vault at monitoring well 9AA (Port Taranaki).

4.3 Analytical Results

The groundwater analytical results are presented in **Table 3**. The following points are noted:

- Motunui
 - Perfluorooctanoic acid (PFOA) was detected in the groundwater samples collected from GW21, GW22, GW31, and GW33 at concentrations of 0.017 µg/L, 0.0029 µg/L, 0.094 µg/L, and 0.67 µg/L, respectively.
 - PFAS were not detected above laboratory limits of reporting (LORs) in the samples collected from GW37 or Control01.
- Waitara Valley
 - PFOA was detected in groundwater samples collected from GW8A and GW10 at concentrations of 0.004 µg/L and 0.0081 µg/L, respectively.
 - PFAS were not detected above the LORs in the sample collected from GW3.
 - PFAS were not detected in the groundwater samples collected from GW5, GW46, GW47, or Control02 above the higher laboratory LOR (0.010 µg/L) applied to these samples due to their high turbidity.
- Omata Tank Farms 1 and 2
 - PFOA was detected in the groundwater sample collected from GWOM1 (Omata Tank Farm 1) at a concentration of 0.0046 µg/L; perfluorohexane sulfonic acid (PFHxS) and perfluorooctane sulfonic acid (PFOS) were not detected above laboratory LORs in this sample.
 - PFHxS, PFOS and PFOA were detected in the groundwater samples collected from GW28 and GW29 (Omata Tank Farm 2) at concentrations of 0.015 µg/L and 0.32 µg/L, 0.22 µg/L and 0.42 µg/L, and 0.018 µg/L and 0.044 µg/L respectively.
- Port Taranaki
 - PFOA was detected in the groundwater sample collected from GW9AA at a concentration of 0.020 µg/L; PFHxS and PFOS were not detected above the higher laboratory LOR (0.010 µg/L) applied to this sample due to its high turbidity.

- PFHxS, PFOS, and PFOA were detected in the groundwater sample collected from GW9B at concentrations of 0.015 µg/L, 0.066 µg/L and 0.028 µg/L respectively.

4.3.1 Quality Assurance / Quality Control

Samples were transported to AsureQuality, under AECOM chain of custody procedures, for analysis.

Groundwater samples were collected from Motunui and Waitara Valley on 21 and 22 August 2018 respectively, and were received by AsureQuality on 23 August 2018. Groundwater samples were collected from Omata Tank Farms 1 and 2 and Port Taranaki on 23 August 2018 and were received by AsureQuality on 24 August 2018.

PFAS were not detected above laboratory LORs in the trip blank sample (QAQC 04) submitted with the Motunui and Waitara Valley samples, or the duplicate groundwater samples collected from Control01 (Motunui, QAQC01) and Control02 (Waitara Valley, QAQC05) during groundwater sampling.

The calculated relative percentage difference (RPD⁹) for detected PFAS concentrations reported for the primary and duplicate groundwater samples collected from monitoring well GW9B (Port Taranaki) is presented in **Table 4**. The RPD calculated for the primary and duplicate groundwater samples ranged from 0% to 6% and were within acceptable limits (less than 20%).

AsureQuality indicated that the analysis for samples GW33 (Motunui); GW5, GW46, GW47, Control02, and QAQC05 (Waitara Valley); GW28 (Omata Tank Farm 2); and GW9AA (Port Taranaki) could not achieve a laboratory LOR below 0.1 µg/L owing to the high turbidity of the samples. In order to achieve a lower LOR of 0.01 µg/L for these samples, they were reanalysed using a deviation to the accredited methodology at the request of AECOM.

While accreditation was not possible for all samples due to turbidity, the analytical methods were considered valid for the sample types. Overall, the QA/QC results are assessed to meet the data quality objectives for this investigation.

4.4 Comparison with Interim Guidelines

Groundwater samples have been compared against relevant interim guideline values recommended by the HEPA NEMP, comprising:

- Australian Department of Health 2017 health-based guidance values for drinking and recreation water, with the recreation value selected for offsite recreational users and the drinking water provided for reference only (groundwater is not used for drinking water at the Sites).
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000), with 95% species protection level for PFOS and PFOA selected as appropriate for the Sites and the most-conservative 99% species protection level for PFOS and PFOA provided for reference only. These values were selected for aquatic/benthic organisms.

The NEMP notes that a degree of conservatism has been included in the guidelines values which means that exceeding these values does not constitute a risk if other pathways are controlled. This inbuilt conservatism is necessary when deriving screening values to be protective of communities where multiple exposure pathways may be present.

Guideline values are presented in **Table 3** for comparison purposes. The following points are noted:

- The concentration of PFOA detected in groundwater from GW33 (Motunui) exceeded the interim drinking water guideline value.
- The concentration of PFHxS/PFOS detected in groundwater from GW29 (Omata Tank Farm 2) exceeded the interim guideline values for drinking and recreation water, and the total PFOS concentration detected in groundwater from GW29 exceeded the interim guideline value for 95% freshwater and marine species protection.

All other analytical results are below the applicable interim guideline values for PFAS.

⁹ RPD = (primary result – duplicate result) x 100 / mean result

5.0 Discussion

Based on this initial screening, PFAS are present in groundwater at the Motunui, Waitara Valley, Omata Tank Farms, and Port Taranaki sites.

Though the concentration of PFOA at GW33 (Motunui) exceeded the interim drinking water guideline value for PFOA, this does not represent a risk to human health as the drinking water exposure pathway is considered to be incomplete. The site and surrounding area is served by the New Plymouth District Council municipal water supply, which is sourced from Lake Mangamahoe approximately 20 km southwest and upstream of the site.

PFAS are present in groundwater at the Omata Tank Farm 2 site at concentrations exceeding the interim ANZECC guideline value for 95% freshwater and marine species protection. The ANZECC guidelines values are intended to be applied in a receiving water body. Groundwater beneath the Omata Tank Farm 2 site is inferred to discharge to the Tasman Sea. The potential risk to recreational users of, and ecological receptors in, the Tasman Sea is considered minor/insignificant owing to the dilution factor of the Tasman Sea. Significant dilution occurs when groundwater discharges to coastal water.

Although PFAS were detected in groundwater, the concentrations in this initial screening indicate it is unlikely there is a significant risk to human health or ecological receptors.

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Figures



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Sampling Locations

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SAMPLING LOCATIONS PLAN - METHANEX SITES

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FIGURE 1



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● Groundwater Monitoring Well Location

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METHANEX MOTUNUI SITE PLAN

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FIGURE 2



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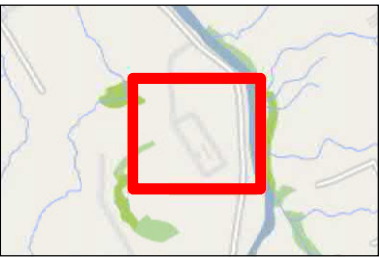
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METHANEX WAITARA VALLEY
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FIGURE 3



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- Groundwater Monitoring Well Location
- Methanex Site Boundaries

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METHANEX OMATA TANK FARMS
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FIGURE 4



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Groundwater Monitoring Well Location

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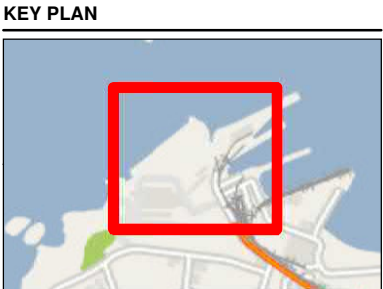
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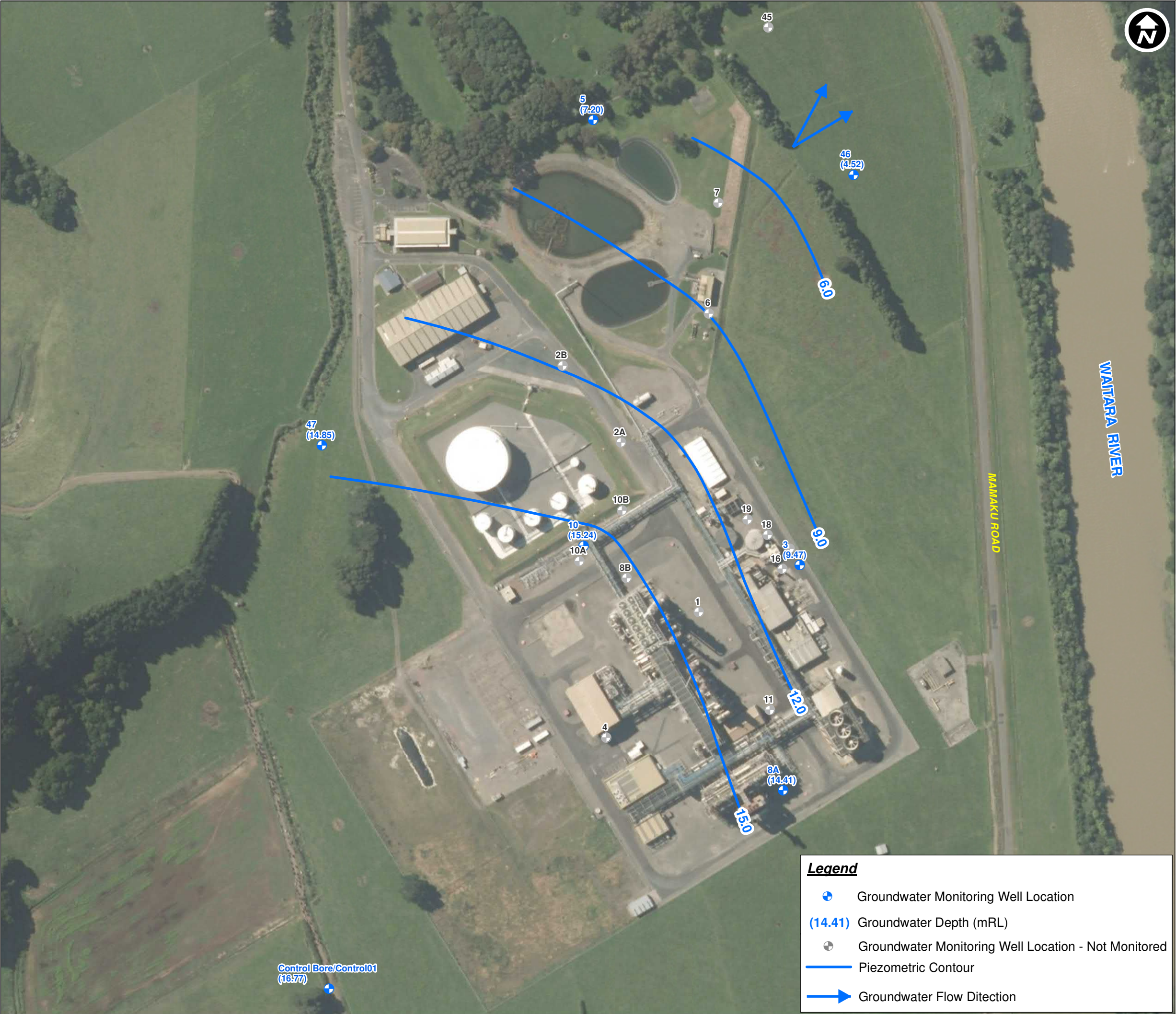
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METHANEX PORT TARANAKI
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MAP NUMBER
FIGURE 5



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PROJECT
TRC PFAS SAMPLING
- Methanex Sites

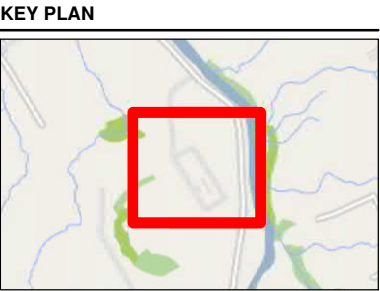


CONSULTANT
AECOM New Zealand Limited
www.aecom.com

SPATIAL REFERENCE
Scale: 1:2,500 (A3 size)
20 10 0 20 40 60 80
m
Map features depicted in terms of NZTM 2000 projection.
Data Sources:
Cadastral Boundaries – LINZ NZ Cadastral Dataset 2018

PROJECT MANAGEMENT			
Approved	VW	Date	25/10/2018
Checked	VW	Date	25/10/2018
Designed	SS	Date	25/10/2018
Drawn	SS	Date	25/10/2018

ISSUE/REVISION		
A	25/10/2018	DRAFT
Rev	Date	Description



PROJECT NUMBER
60584690
SHEET TITLE
METHANEX WAITARA VALLEY
GROUNDWATER CONTOUR PLAN
MAP NUMBER
FIGURE 6

Tables

Table 2: Groundwater Gauging Data

Well ID	Location	Date	Total Well Depth (m bTOC)	TOC Elevation (m RL) [#]	SWL (m bTOC)	Depth to LNAPL (m BTOC)	Groundwater Elevation (m RL)
GW21	Motonui	21-Aug-18	11.00	-	6.174	ND	-
GW22		21-Aug-18	21.10	-	7.190	ND	-
GW31		21-Aug-18	12.00	-	5.345	ND	-
GW33		21-Aug-18	6.50	-	3.457	ND	-
GW37		21-Aug-18	8.50	-	5.123	ND	-
Control01		21-Aug-18	21.70	-	6.806	ND	-
GW3	Waitara Valley	22-Aug-18	10.02	17.97	8.500	ND	9.47
GW5		22-Aug-18	3.38	8.65	1.447	ND	7.20
GW8A		22-Aug-18	5.40	17.47	3.064	ND	14.41
GW10		22-Aug-18	4.85	16.75	1.512	ND	15.24
GW46		22-Aug-18	7.00	8.83	4.314	ND	4.52
GW47		22-Aug-18	4.00	16.33	1.481	ND	14.85
Control02		22-Aug-18	4.54	17.77	0.999	ND	16.77
GWOM1	Omata Tank Farm 1	23-Aug-18	6.00	-	1.838	ND	-
GW28	Omata Tank Farm 2	23-Aug-18	12.00	-	5.638	ND	-
GW29		23-Aug-18	15.00	-	9.018	ND	-
GW9AA	Port Taranaki	23-Aug-18	4.90	-	2.221	ND	-
GW9B		23-Aug-18	5.83	-	1.679	ND	-

Notes:

SWL = Standing water level (pre-purging)

RL = Reduced level

m = Metres

bTOC = Below top of casing

LNAPL = Light non-aqueous phase liquid

[#]m RL = provided by TRC. Surveyed by Taylor Patrick Surveors on 23/06/2014. Elevation are in Taranaki Vertical Datum 1970.

ND = Not detected

- = no data or not applicable

Table 3 - Groundwater Analytical Results

	Guideline Values					Sample Details and Analytical Results																			
Receptor	Human		Ecological																						
Source of Criteria	Australian DoH 2017		ANZECC		Sample Site	Motunui								Waitara Valley											
Guideline	Drinking Water	Recreational Water	99% species protection	95% species protection	Sample Location	GW21	GW22	GW31	GW33*	GW37	Control01		GW3	GW5*	GW8A	GW10									
					AECOM Sample Number						Control01	QAQC01													
					Laboratory Sample Reference						18-213689-1	18-213689-2					18-213689-3	18-213689-4	18-213689-5	18-213689-6	18-213620-1	18-213406-1	18-213406-2	18-213406-3	18-213406-4
					Date Sampled						21-Aug-18	21-Aug-18					21-Aug-18	21-Aug-18	21-Aug-18	21-Aug-18	21-Aug-18	22-Aug-18	22-Aug-18	22-Aug-18	22-Aug-18
Perfluoroalkylsulfonic acids					Perfluoroalkylsulfonic acids																				
di-PFHxS	-	-	-	-	di-PFHxS	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010									
mono-PFHxS	-	-	-	-	mono-PFHxS	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010									
L-PFHxS	-	-	-	-	L-PFHxS	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010									
Total PFHxS ¹	-	-	-	-	Total PFHxS ¹	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010									
di-PFOS	-	-	-	-	di-PFOS	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010									
mono-PFOS	-	-	-	-	mono-PFOS	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010									
L-PFOS	-	-	-	-	L-PFOS	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010									
Total PFOS ²	-	-	0.00023	<u>0.13</u>	Total PFOS ²	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010									
PFHxS/PFOS ³	0.07	<i>0.7</i>	-	-	PFHxS/PFOS ³	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010									
Perfluoroalkylcarboxylic acids					Perfluoroalkylcarboxylic acids																				
PFOA	0.56	5.6	19	<u>220</u>	PFOA	0.017	0.0029	0.094	0.67	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.010	0.004	0.0081									
	Guideline Values					Sample Details and Analytical Results																			
Receptor	Human		Ecological																						
Source of Criteria	Australian DoH 2017		ANZECC		Sample Location	Waitara Valley				Trip Blank	Omata Tank Farm 2		Omata Tank Farm 1	Port Taranaki											
Guideline	Drinking Water	Recreational Water	99% species protection	95% species protection	Sample Location	GW46*	GW47*	Control02		QAQC04	GW28*	GW29 (Grab Sample)	GWOM1	GW9AA*	GW9B										
					AECOM Sample Number			Control02*	QAQC05*						GW9B	QAQC08									
					Laboratory Sample Reference			18-213406-5	18-213406-6						18-213406-7	18-213620-5	18-213620-4	18-213132-4	18-213132-5	18-213132-1	18-213132-2	18-213132-3	18-213132-6		
					Date Sampled			22-Aug-18	22-Aug-18						22-Aug-18	22-Aug-18	21-Aug-18	23-Aug-18	23-Aug-18	23-Aug-18	23-Aug-18	23-Aug-18	23-Aug-18		
Perfluoroalkylsulfonic acids					Perfluoroalkylsulfonic acids																				
di-PFHxS	-	-	-	-	di-PFHxS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.0010	< 0.010	< 0.0010	< 0.0010	< 0.010	< 0.0010	< 0.0010									
mono-PFHxS	-	-	-	-	mono-PFHxS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.0010	< 0.010	< 0.0010	< 0.010	< 0.010	< 0.0010	< 0.0010									
L-PFHxS	-	-	-	-	L-PFHxS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.0010	0.015	0.27	< 0.0010	< 0.010	0.0015	0.0015									
Total PFHxS ¹	-	-	-	-	Total PFHxS ¹	< 0.010	< 0.010	< 0.010	< 0.010	< 0.0010	0.015	0.32	< 0.0010	< 0.010	0.0015	0.0015									
di-PFOS	-	-	-	-	di-PFOS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.0010	< 0.010	0.0065	< 0.0010	< 0.010	< 0.0010	< 0.0010									
mono-PFOS	-	-	-	-	mono-PFOS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.0010	< 0.010	0.10	< 0.0010	< 0.010	0.0018	0.0017									
L-PFOS	-	-	-	-	L-PFOS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.0010	0.022	0.31	< 0.0010	< 0.010	0.0048	0.0045									
Total PFOS ²	-	-	0.00023	<u>0.13</u>	Total PFOS ²	< 0.010	< 0.010	< 0.010	< 0.010	< 0.0010	0.022	<u>0.42</u>	< 0.0010	< 0.010	0.0066	0.0062									
PFHxS/PFOS ³	0.07	<i>0.7</i>	-	-	PFHxS/PFOS ³	< 0.010	< 0.010	< 0.010	< 0.010	< 0.0010	0.037	0.74	< 0.0010	< 0.010	0.0081	0.0077									
Perfluoroalkylcarboxylic acids					Perfluoroalkylcarboxylic acids																				
PFOA	0.56	5.6	19	<u>220</u>	PFOA	< 0.010	< 0.010	< 0.010	< 0.010	< 0.0010	0.018	0.044	0.0046	0.020	0.028	0.028									

Notes:
All results and criteria are expressed in units of µg/L.
- no criteria
* Any tests for wells marked with this symbol are not accredited due to turbidity (AsureQuality)

PFHxS = perfluorohexane sulfonic acid
di-PFHxS = total perfluorodimethylbutane sulfonic acids
mono-PFHxS = total perfluoromethylpentane sulfonic acids
L-PFHxS = linear perfluorohexanesulfonic acid
PFOS = perfluorooctane sulfonic acid
di-PFOS = total perfluorodimethylhexane sulfonic acids
mono-PFOS = total perfluoromethylheptane sulfonic acids
L-PFOS = linear perfluorooctanesulfonic acid
PFOA = perfluorooctanoic acid

1. Total PFHxS = The numerical sum of di-PFHxS, mono-PFHxS, and L-PFHxS
2. Total PFOS = The numerical sum of di-PFOS, mono-PFOS, and L-PFOS
3. PFHxS/PFOS = The numerical sum of Total PFHxS and Total PFOS

Sources of Guideline Values:
Australian DoH 2017: Health Based Guidance Values for PFAS for Use in Site Investigations in Australia. *Australia Government Department of Health, 2017.*
ANZECC: National Water Quality Management Strategy: Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC,2000. Technical draft default guideline values for PFOS and PFOA.

Bold - exceeds Australian DoH drinking water criteria
Italics - exceeds Australian DoH recreational water criteria
Underlined - Exceeds ANZECC 95% freshwater species protection criteria

Table 4: Relative Percentage Difference

Analyte	Primary Sample	Duplicate	RPD%
	GW9B	QAQC08	
L-PFHxS	0.0015	0.0015	0%
Total PFHxS ¹	0.0015	0.0015	0%
mono-PFOS	0.0018	0.0017	6%
L-PFOS	0.0048	0.0045	6%
Total PFOS ²	0.0066	0.0062	6%
PFHxS/PFOS ³	0.0081	0.0077	5%
PFOA	0.028	0.028	0%

Notes:

All results are expressed in units of µg/L.

RPD: relative percentage difference

RPD calculated only for detected compounds.

PFHxS = perfluorohexane sulfonic acid

di-PFHxS = total perfluorodimethylbutane sulfonic acids

mono-PFHxS = total perfluoromethylpentane sulfonic acids

L-PFHxS = linear perfluorohexanesulfonic acid

PFOS = perfluorooctane sulfonic acid

di-PFOS = total perfluorodimethylhexane sulfonic acids

mono-PFOS = total perfluoromethylheptane sulfonic acids

L-PFOS = linear perfluorooctanesulfonic acid

PFOA = perfluorooctanoic acid

1. Total PFHxS = The numerical sum of di-PFHxS, mono-PFHxS, and L-PFHxS

2. Total PFOS = The numerical sum of di-PFOS, mono-PFOS, and L-PFOS

3. PFHxS/PFOS = The numerical sum of Total PFHxS and Total PFOS

Appendix A

Field Sampling Sheets

ANZ

FQM - NAPL and Groundwater Level Gauging Record

Q4AN(EV)-414-FM1

Project Name:	TRL-PEAJ SAMPLING		Project Location:	METHANEX		PM Name:	SEAN HUDDGENS	
Project Number:	60584690		Client:	TRL		Fieldwork Staff Name:	REBECCA JOYCE	

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Field Data										
Well ID	Date (dd/mm/yy)	Time (24hr:mm)	PID Reading (ppm)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition, odour, NAPL colour and viscosity)
6W21	21/8/18	14:15	0.3	—	6.894	—	—	11.0	—	NVO
6W22	↓	15:38	0.0	—	7.190	—	—	21.2	—	NVO
CONTROL	↓	10:43	0.3	—	6.806	—	—	21.7	—	NVO
6W37	↓	15:00	0.0	—	5.123	—	—	8.5	—	NVO
6W31	↓	11:54	0.1	—	5.345	—	—	12.0	—	NVO → slight turbidity
6W33	↓	13:17	0.2	—	3.457	—	—	6.5	—	NVO
6W46	22/8/18	09:35	0.1	—	4.314	—	—	7.0	—	NVO
CONTROL	↓	10:45	0.0	—	0.999	—	—	4.54	—	NVO
6W47	↓	11:30	0.0	—	1.481	—	—	4.0	—	NVO → slightly cloudy
6W3	↓	13:45	0.3	—	8.500	—	—	10.02	—	NVO
6W10	↓	14:30	0.1	—	1.512	—	—	4.85	—	NVO
6W5	↓	15:20	0.0	—	1.447	—	—	3.38	—	NVO
6W8A	↓	16:00	0.0	—	3.064	—	—	5.40	—	NVO
6W9B	23/8/18	08:48	0.0	—	1.679	—	—	5.83	—	NVO
6W9AA	↓	10:30	0.3	—	1.838	—	—	6.04	—	Organic odour - marine water
6W0M1	↓	11:35	0.0	—	1.838	—	—	6.0	—	NVO
6W28	↓	12:10	0.0	—	5.638	—	—	12.0	—	NVO
6W29	↓	13:10	0.0	—	9.018	—	—	15.0	—	NVO

Measurement Equipment				Notes/Comments			
Make & Model:	IF63 /PID2	Supplier:	VAN WAZI	(PID) - photo ionisation detector; (ppm) - parts per million; (LNAPL) - light non-aqueous phase liquids; (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) - metres below top of casing			
Serial No.:		Calibration Report Provided?	YES → see attached				

Approval and Distribution

		23/8/18 Date				13/11/18 Date	
Distribution: Project Central File							

Q4AN(EV)-405-FM1
FQM - Groundwater Sampling and Purging Record (Q4AN(EV)-405-FM1)
Revision 2 July 12, 2016

PID (ppm)
0.1 BG \rightarrow 0.2 down hole

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: <u>TRL-PFAS</u>		Project Number: <u>60584690</u>		PM Name: <u>SEAN HUDGENS</u>		Bore ID: <u>CONTROL 01</u>			
Client: <u>TRL/MEETMANER</u>		Project Location: <u>MOTUNGA</u>		Fieldwork Staff: <u>RJ + LT</u>		Sample Date: <u>21/8/18</u>			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level: <u>21/8/18</u>		Bore Radius (mm): <u>250</u>		Chem Kit Serial No.: <u>0535</u>		<input type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): <u>6.808</u>		Screen Interval (m): <u>-</u>		Chem Kit Model: <u>-</u>		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc): <u>21.7</u>		Casing Radius (mm): <u>50</u>		Corrected Redox: <u>Y I N</u>		<input type="checkbox"/> Disposable			
Depth to Product (m-pvc): <u>-</u>		Cover Type (gatic/stick up): <u>-</u>		(The correction to apply is probe dependent)		<input type="checkbox"/> Other (specify)			
Product Thickness (m): <u>-</u>		Bore Locked (YES/NO): <u>-</u>		Parameter method: <input checked="" type="checkbox"/> Downhole		<input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra			
		Key Type (if applicable): <u>-</u>		<input type="checkbox"/> Retrieved		<input type="checkbox"/> Other (specify)			
Calculated bore volume (L):		Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):			
Water Quality Parameters									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or μ S/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
10:43	0.5	6.806	100ml/m	6.74	214.6	6.62	100.7	15.4	NO ODOUR/Colour - colourless
10:48	1.0	6.814	"	6.51	212.4	6.59	78.3	15.4	2.1 NTU
10:53	1.5	6.815	"	6.49	212.0	6.58	67.3	15.3	2.0 NTU
10:58	2.0	6.820	"	6.41	211.8	6.58	67.8	15.3	2.0
Acceptable Parameter Range: $\pm 10\%$ $\pm 3\%$ ± 0.05 ± 10 mV ± 0.2 °C $\pm 10\%$ turbidity (if using a turbidity meter)									
Analytes Sampled for:		Bottles Collected			QA/QC Information		Field Comments		
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)	QA/QC 01 = DUP		Bore volume calculation, bore condition, fate of tubing, redox correction etc.		
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic	QA/QC 02 = FIELD				
					QA/QC 03 = RINSE				
					QA/QC 04 = TRIP				
Approval and Distribution									
Fieldwork Staff Signature		23/8/18		Checker name and Signature		13/11/18			
Project Manager Signature		13/11/18							
Distribution: Project Central File									

downhole
PID = 0.3 \rightarrow same as background

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

[illegible]

Q4AN(EV)-405-FM1
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Revision 2 July 12, 2016

- sludge lagoon

[illegible]

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

[illegible]

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

[illegible]

Q4AN(EV)-405-FM1
FQM - Groundwater Sampling and Purging Record (Q4AN(EV)-405-FM1)
Revision 2 July 12, 2016

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

[illegible]

FQM - Groundwater Sampling and Purging Record

FAIR AMOUNT
OF OXIDIZED FE
on well +
sample



Q4AN(EV)-405-FM1

[illegible]

Q4AN(EV)-405-FM1
FQM - Groundwater Sampling and Purging Record (Q4AN(EV)-405-FM1)
Revision 2, July 12, 2016

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: TRC - PEAS		Project Number: 60584690		PM Name: SEAN HUGHES		Bore ID: 6W 8A					
Client: TRC / METHANEX		Project Location: WAITARA VALLEY		Fieldwork Staff: RJ + LT		Sample Date: 22/8/18					
General Bore Information				Parameter Info.		Decontamination		Sampling Method		Hydrasleeve info.	
Date of GW Level: 22/8/18		Bore Radius (mm): 150		Chem Kit Serial No.: 055 5		<input type="checkbox"/> Decontaminated		<input checked="" type="checkbox"/> Low Flow Pump rate: 100ml/m		Monitoring sequence followed (number in order):	
Depth to GW (m-pvc): 3.064		Screen Interval (m): -		Chem Kit Model:		<input type="checkbox"/> Dedicated		Intake depth:		Hydrasleeve Size:	
Bore Depth (m-pvc): 5.40		Casing Radius (mm): 50		Corrected Redox: Y / N		<input type="checkbox"/> Disposable		<input type="checkbox"/> Bailer <input type="checkbox"/> Hydrasleeve		Sampling Depth (m-pvc):	
Depth to Product (m-pvc): -		Cover Type (gate/stick up):		(The correction to apply is probe dependent)		<input type="checkbox"/> Other (specify)		<input checked="" type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Waterra		Hydrasleeve Install time:	
Product Thickness (m): -		Bore Locked (YES/NO): hinge		Parameter method: <input type="checkbox"/> Downhole				<input type="checkbox"/> Other (specify)		Sampling Start Time:	
		Key Type (if applicable): top		<input type="checkbox"/> Retrieved						Parameters	
Calculated bore volume (L): -		Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):					
Water Quality Parameters											
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity		
16:00	0.5	3.064	100ml/m	7.06	115.6	7.10	64.2	17.7	7.3 NTU NVO		
16:05	1.0	3.097	100ml/m	6.95	115.7	6.39	62.9	18.0	6.4 " "		
16:10	1.5		100ml/m	6.94	116.0	6.20	62.6	18.2	7.00 " "		
16:15	2.0		100ml/m	6.93	116.0	6.16	63.3	18.3	7.5 " "		
16:20	2.5		100ml/m	6.92	116.3	6.14	63.8	18.3	7.2 " "		
Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C ± 10% turbidity (if using a turbidity meter)											
Analytes Sampled for:		Bottles Collected				QA/QC Information		Field Comments			
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.				
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic			BACKGROUND → 0.0ppm				
							DOWNHOLE → " "				
							0.1ppm → " "				
Approval and Distribution											
Fieldwork Staff Signature		23/8/18		Checker Name and Signature		13/11/18					
Project Manager Signature		13/11/18		Distribution: Project Central File							

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

[illegible]

#6W9A not available to sample as area of bund was underwater following overnight rain

Project Name: TRL-PFAS		Project Number: 60584690		PM Name: SEAN HUDGENS		Bore ID: 6W9AA			
Client: TRL-METHANEX		Project Location: BORI TARANAKI		Fieldwork Staff: RJ + LT		Sample Date: 23/08/18			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level: 23/8/18		Bore Radius (mm): 250		Chem Kit Serial No.: DSS 5		<input type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): 2.221		Screen Interval (m): -		Chem Kit Model: -		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc): 4.90		Casing Radius (mm): 50		Corrected Redox: Y I N		<input type="checkbox"/> Disposable			
Depth to Product (m-pvc): -		Cover Type (gatic stick up):		(The correction to apply is probe dependent)		<input type="checkbox"/> Other (specify)			
Product Thickness (m): -		Bore Locked (YES/NO):		Parameter method: <input checked="" type="checkbox"/> Downhole		<input type="checkbox"/> Other (specify)			
		Key Type (if applicable): MANHOLE		<input type="checkbox"/> Retrieved					
Calculated bore volume (L): -		Includes/ excludes bore annulus (circle) -		# purge volumes removed: -		Total purged volume (L): -			
Water Quality Parameters									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
10:30	0.5	2.221	100ml/m	2.32	967	6.50	-4.5	15.7	3.7 NTU - organic odour
10:35	1.0	↓	↓	1.29	988	6.53	-29.6	15.6	2.3 " - no sheen visible
10:40	1.5	↓	↓	1.18	996	6.54	-37.3	15.7	3.0 "
10:45	2.0	↓	↓	1.13	1004	6.55	-42.7	15.8	2.2 "
Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C ± 10% turbidity (if using a turbidity meter)									
Analytes Sampled for:		Bottles Collected			QA/QC Information		Field Comments		
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.		
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic			NEED MANHOLE LIFTER. → well lid/cap under water + needed bailing out. → sheen visible on water under well lid - above sealed cap. PID → 0.0ppm background 6.3ppm downhole.		
Approval and Distribution									
Fieldwork Staff Signature		23/8/18		Checker Name and Signature		13/11/18			
Project Manager Signature		13/11/18		Distribution: Project Central File					

→ organic (marine) odour in water

Q4AN(EV)-405-FM1
FQM - Groundwater Sampling and Purging Record (Q4AN(EV)-405-FM1)
Revision 2, July 12, 2016

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name: TRL-PFAJ		Project Number: 60584690		PM Name: SEAN HUGHES		Bore ID: 6W28			
Client: TRL/METHANEX		Project Location: OMATA 2 TANK FARM		Fieldwork Staff: RJ + LT		Sample Date: 23/8/18			
General Bore Information				Parameter Info.		Decontamination			
Date of GW Level: 23/8/18		Bore Radius (mm): 250		Chem Kit Serial No.: DSS 5		<input type="checkbox"/> Decontaminated			
Depth to GW (m-pvc): 5.638		Screen Interval (m): -		Chem Kit Model: -		<input type="checkbox"/> Dedicated			
Bore Depth (m-pvc): 12.0		Casing Radius (mm): 50		Corrected Redox: Y I N		<input type="checkbox"/> Disposable			
Depth to Product (m-pvc): -		Cover Type (gatic/stick up): -		(The correction to apply is probe dependent)		<input type="checkbox"/> Other (specify)			
Product Thickness (m): -		Bore Locked (YES/NO): NO		Parameter method: <input checked="" type="checkbox"/> Downhole		<input type="checkbox"/> Retrieved			
Key Type (if applicable):									
Calculated bore volume (L):		Includes/ excludes bore annulus (circle)		# purge volumes removed:		Total purged volume (L):			
Sampling Method									
Intake depth:		Hydrasleeve Size:		Hydrasleeve Type:		Monitoring sequence followed (number in order):			
<input checked="" type="checkbox"/> Low Flow Pump rate: 100ml/m		<input type="checkbox"/> Bailer		<input type="checkbox"/> Hydrasleeve		<input type="checkbox"/> Gauging			
<input type="checkbox"/> Peristaltic Pump		<input type="checkbox"/> Waterra		<input type="checkbox"/> Other (specify)		<input type="checkbox"/> Hydrasleeve in			
Sampling Depth (m-pvc):		Hydrasleeve Install time:		Sampling Start Time:		Hydrasleeve out			
						Parameters			
Water Quality Parameters									
Time	Cumulative Vol. Removed (L)	SWL (m-pvc)	Pump Rate	DO (ppm or mg/L)	E.C. (mS/cm or μ S/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
12:15	0.5	5.638	100ml/m	1.57	402.2	6.51	2.6	16.2	2.2 NTU → NVO
12:20	1.0	5.679	↓	1.04	406.1	6.46	-13.7	16.4	3.6 "
12:25	1.5	↓	↓	0.99	405.7	6.46	-16.3	16.4	3.7 "
12:30	2.0	↓	↓	0.87	405.2	6.47	-20.1	16.5	4.4 "
Acceptable Parameter Range: ± 10% ± 3% ± 0.05 ± 10 mV ± 0.2 °C ± 10% turbidity (if using a turbidity meter)									
Analytes Sampled for:		Bottles Collected				QA/QC Information		Field Comments	
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO ₃)			Bore volume calculation, bore condition, fate of tubing, redox correction etc.		
		x 40 mL Vial (H ₂ SO ₄)	x 100 mL Amber	x 250 mL Plastic			0.0 ppm - Background		
							0.0 ppm - down hole.		
Approval and Distribution									
Fieldwork Staff Signature		23/8/18		Checker Name and Signature		13/11/18			
Project Manager Signature		13/11/18							
Distribution: Project Central File									

ANZ



Q4AN(EV)-405-FM1

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Appendix B

Laboratory Analytical Reports

Certificate of Analysis

Final Report

Sean Hudgens
AECOM Consulting Services - Wellington
PO Box 27277
Wellington 6141
New Zealand

PO Number: 73494

Submitted by:
 Taranaki Regional Council
 Private Bag 713
 Stratford 4352
 New Zealand

Report Issued: 18-Sep-2018

AsureQuality Reference: **18-213689**

Sample(s) Received: 23-Aug-2018 07:30

Results

The tests were performed on the samples as received.

Customer Sample Name: GW21 **AsureQuality ID:** 18-213689-1

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 21-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPtS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.014	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.035	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.029	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.035	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.017	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0058	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality's standard terms of business apply to the analysis set out in this report.

Report Number: 1240936

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Test	Result	Unit	Method Reference
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.0015	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	0.0012	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	91	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	121	%	AsureQuality Method (LC-MS/MS)
M4PFBA	63	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	88	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	89	%	AsureQuality Method (LC-MS/MS)
MPFHpA	89	%	AsureQuality Method (LC-MS/MS)
M8PFOA	89	%	AsureQuality Method (LC-MS/MS)
M9PFNA	94	%	AsureQuality Method (LC-MS/MS)
M6PFDA	116	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	199 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	NR	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	NR	%	AsureQuality Method (LC-MS/MS)
MPFOSA	81	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	148	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	133	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	133	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	92	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	77	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: GW22

AsureQuality ID: 18-213689-2

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 21-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.0069	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.0018	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.0019	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.0023	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0029	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0012	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	93	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	94	%	AsureQuality Method (LC-MS/MS)
M8PFOS	120	%	AsureQuality Method (LC-MS/MS)
M4PFBA	65	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	89	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	90	%	AsureQuality Method (LC-MS/MS)
MPFHpA	92	%	AsureQuality Method (LC-MS/MS)
M8PFOA	95	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	AsureQuality Method (LC-MS/MS)
M6PFDA	127	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M7PFUnDA	201 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	NR	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	NR	%	AsureQuality Method (LC-MS/MS)
MPFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	152 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	133	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	214 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	151 (R)	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	182 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	79	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	115	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: GW31

AsureQuality ID: 18-213689-3

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 21-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPoS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.11	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.52	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.30	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.18	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.094	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.030	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	0.0045	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Perfluorooctanesulfonamides			
PFOSA	NR	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	0.0043	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	1.1	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	0.18	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	72	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	76	%	AsureQuality Method (LC-MS/MS)
M8PFOS	94	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	105	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	81	%	AsureQuality Method (LC-MS/MS)
M9PFNA	89	%	AsureQuality Method (LC-MS/MS)
M6PFDA	104	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	210 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	NR	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	NR	%	AsureQuality Method (LC-MS/MS)
MPFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	117	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	150	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	110	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: GW33

AsureQuality ID: 18-213689-4

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 21-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPoS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFBS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
mono-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA *	0.35	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA *	0.34	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA *	0.36	µg/L	AsureQuality Method (LC-MS/MS)
PFOA *	0.67	µg/L	AsureQuality Method (LC-MS/MS)
PFNA *	0.091	µg/L	AsureQuality Method (LC-MS/MS)
PFDA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS *	0.24	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS *	0.64	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS *	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS *	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS *	110	%	AsureQuality Method (LC-MS/MS)
M4PFBA *	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA *	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA *	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA *	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA *	103	%	AsureQuality Method (LC-MS/MS)
M9PFNA *	121	%	AsureQuality Method (LC-MS/MS)
M6PFDA *	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA *	102	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
MPFDoDA *	110	%	AsureQuality Method (LC-MS/MS)
MPFTeDA *	135	%	AsureQuality Method (LC-MS/MS)
MPFOSA *	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA *	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA *	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA *	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA *	111	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE *	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE *	111	%	AsureQuality Method (LC-MS/MS)
M4:2FTS *	106	%	AsureQuality Method (LC-MS/MS)
M6:2FTS *	116	%	AsureQuality Method (LC-MS/MS)
M8:2FTS *	104	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: GW37

AsureQuality ID: 18-213689-5

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 21-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPtS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.0029	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.0038	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.0016	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	92	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	98	%	AsureQuality Method (LC-MS/MS)
M8PFOS	116	%	AsureQuality Method (LC-MS/MS)
M4PFBA	89	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	93	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	91	%	AsureQuality Method (LC-MS/MS)
MPFHpA	92	%	AsureQuality Method (LC-MS/MS)
M8PFOA	94	%	AsureQuality Method (LC-MS/MS)
M9PFNA	95	%	AsureQuality Method (LC-MS/MS)
M6PFDA	115	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	158 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDODA	185 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	NR	%	AsureQuality Method (LC-MS/MS)
MPFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	132	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	123	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	72	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	81	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	92	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	75	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	107	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: Control01

AsureQuality ID: 18-213689-6

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 21-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPtS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	98	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	92	%	AsureQuality Method (LC-MS/MS)
M8PFOS	77	%	AsureQuality Method (LC-MS/MS)
M4PFBA	90	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	99	%	AsureQuality Method (LC-MS/MS)
MPFHpA	94	%	AsureQuality Method (LC-MS/MS)
M8PFOA	91	%	AsureQuality Method (LC-MS/MS)
M9PFNA	86	%	AsureQuality Method (LC-MS/MS)
M6PFDA	80	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	71	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	68	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	NR	%	AsureQuality Method (LC-MS/MS)
MPFOSA	59	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNEtFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	56	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	61	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	NR	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	NR	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	75	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	83	%	AsureQuality Method (LC-MS/MS)

QC Results

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Relates to sample(s) 18-213689-1, 18-213689-2, 18-213689-3, 18-213689-5, 18-213689-6

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	89	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	92	%	AsureQuality Method (LC-MS/MS)
M8PFOS	90	%	AsureQuality Method (LC-MS/MS)
M4PFBA	88	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	87	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	89	%	AsureQuality Method (LC-MS/MS)
MPFHpA	89	%	AsureQuality Method (LC-MS/MS)
M8PFOA	89	%	AsureQuality Method (LC-MS/MS)
M9PFNA	86	%	AsureQuality Method (LC-MS/MS)
M6PFDA	92	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	138	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	285 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	NR	%	AsureQuality Method (LC-MS/MS)
MPFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	130	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	235 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	150	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	82	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	84	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	73	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

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Relates to sample(s) 18-213689-4

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water - High Level			
Perfluoroalkylsulfonic acids			
PFPoS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPoS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
L-PFHxS (1)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<5.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<5.0	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	103	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	105	%	AsureQuality Method (LC-MS/MS)
M8PFOS	107	%	AsureQuality Method (LC-MS/MS)
M4PFBA	104	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	103	%	AsureQuality Method (LC-MS/MS)
M8PFOA	101	%	AsureQuality Method (LC-MS/MS)
M9PFNA	108	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M6PFDA	104	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	111	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	104	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	51	%	AsureQuality Method (LC-MS/MS)
MPFOA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOAA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOAA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	106	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	107	%	AsureQuality Method (LC-MS/MS)

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Relates to sample(s) 18-213689-4

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPoS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<1.0	µg/L	AsureQuality Method (LC-MS/MS)

Perfluorooctanesulfonamides

PFOSA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)

Perfluorooctanesulfonamidoethanols

NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)

Telomere Sulfonic acids

4:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)

Internal Standards

M3PFBS	107	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	110	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	107	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	114	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	103	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	39	%	AsureQuality Method (LC-MS/MS)
MPFOSA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	97	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	102	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	103	%	AsureQuality Method (LC-MS/MS)

Analysis Summary**Wellington Laboratory**

Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
DX-PFCS01, 03-SUITE_B	AsureQuality Method (LC-MS/MS)	IANZ	Cameron Evans

Analysis	Method	Accreditation	Authorised by
di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)			
mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)			
L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)			
Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)			
di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)			
mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)			
L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)			
Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)			
Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)			
For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.			
Reported results are corrected for internal standard recovery			

Any tests marked with * are not accredited for specific matrices or analytes.

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable



Cameron Evans

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Water - AsureQuality Method (LC-MS/MS)

Analyte **LOR (µg/L)**

Listing applies to samples: 18-213689-4

Perfluoroalkylsulfonic acids

PFPPrS*	0.0010
PFBS*	0.0010
PFPeS*	0.0010
di-PFHxS (1)*	0.0010
mono-PFHxS (1)*	0.0010
L-PFHxS (1)*	0.0010
Total PFHxS (3)*	0.0010
PFHpS*	0.0010
di-PFOS (5)*	0.0010
mono-PFOS (5)*	0.0010
L-PFOS (5)*	0.0010
Total PFOS (7)*	0.0010
Sum PFHxS+PFOS (1)*	0.0010
PFNS*	0.0010
PFDS*	0.0010

Perfluoroalkylcarboxylic acids

PFBA*	0.0010
PFPeA*	0.0010
PFHxA*	0.0010
PFHpA*	0.0010
PFOA*	0.0010
PFNA*	0.0010
PFDA*	0.0010
PFUnDA*	0.0010
PFDoDA*	0.0010
PFTTrDA*	0.0010
PFTeDA*	0.0010

Perfluorooctanesulfonamides

PFOSA*	0.0010
NEtFOSA-M*	0.0010
NMeFOSA-M*	0.0010

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA*	0.0010
NMeFOSAA*	0.0010

Perfluorooctanesulfonamidoethanols

NEtFOSE-M*	0.0010
NMeFOSE-M*	0.0010

Telomere Sulfonic acids

4:2 FTS*	0.0010
6:2 FTS*	0.0010
8:2 FTS*	0.0010

Listing applies to samples: 18-213689-1, 18-213689-2, 18-213689-3, 18-213689-5, 18-213689-6

PFPPrS	0.0010
PFBS	0.0010
PFPeS	0.0010

di-PFHxS (1)	0.0010
mono-PFHxS (1)	0.0010
L-PFHxS (1)	0.0010
Total PFHxS (3)	0.0010
PFHpS	0.0010
di-PFOS (5)	0.0010
mono-PFOS (5)	0.0010
L-PFOS (5)	0.0010
Total PFOS (7)	0.0010
Sum PFHxS+PFOS (1)	0.0010
PFNS	0.0010
PFDS	0.0010

Perfluoroalkylcarboxylic acids

PFBA	0.0010
PFPeA	0.0010
PFHxA	0.0010
PFHpA	0.0010
PFOA	0.0010
PFNA	0.0010
PFDA	0.0010
PFUnDA	0.0010
PFDoDA	NR
PFTTrDA	NR
PFTeDA	NR

Perfluorooctanesulfonamides

PFOSA	NR
NEtFOSA-M	NR
NMeFOSA-M	NR

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA	0.0010
NMeFOSAA	0.0010

Perfluorooctanesulfonamidoethanols

NEtFOSE-M	NR
NMeFOSE-M	NR

Telomere Sulfonic acids

4:2 FTS	0.0010
6:2 FTS	0.0010
8:2 FTS	0.0010

Analyte Definitions**Poly- and Perfluorinated Alkyl Substances (PFAS) in Water - AsureQuality Method (LC-MS/MS)**

Analyte	Full Name
---------	-----------

Listing applies to samples: 18-213689-4

Perfluoroalkylsulfonic acids

PFPrS*	Perfluoro-1-propanesulfonic acid
PFBS*	Perfluoro-1-butanesulfonic acid
PFPeS*	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)*	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)*	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)*	Linear Perfluorohexanesulfonic acid
PFHpS*	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)*	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)*	Total Perfluoromethylheptane sulfonic acids

Analyte	Full Name
L-PFOS (5)*	Linear Perfluorooctanesulfonic acid
PFNS*	Perfluoro-1-nonanesulfonic acid
PFDS*	Perfluoro-1-decanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA*	Perfluoro-n-butanoic acid
PFPeA*	Perfluoro-n-pentanoic acid
PFHxA*	Perfluoro-n-hexanoic acid
PFHpA*	Perfluoro-n-heptanoic acid
PFOA*	Perfluoro-n-octanoic acid
PFNA*	Perfluoro-n-nonanoic acid
PFDA*	Perfluoro-n-decanoic acid
PFUnDA*	Perfluoro-n-undecanoic acid
PFDoDA*	Perfluoro-n-dodecanoic acid
PFTTrDA*	Perfluoro-n-tridecanoic acid
PFTeDA*	Perfluoro-n-tetradecanoic acid
Perfluorooctanesulfonamides	
PFOSA*	Perfluoro-1-octanesulfonamide
NEtFOSA-M*	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M*	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA*	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA*	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M*	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M*	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS*	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS*	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS*	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
Internal Standards	
M3PFBS*	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS*	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS*	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA*	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA*	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA*	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHpA*	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA*	Perfluoro-n-[13C8]octanoic acid
M9PFNA*	Perfluoro-n-[13C9]nonanoic acid
M6PFDA*	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA*	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA*	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA*	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA*	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA*	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA*	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA*	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA*	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE*	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE*	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS*	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS*	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS*	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid

Analyte	Full Name
Listing applies to samples: 18-213689-1, 18-213689-2, 18-213689-3, 18-213689-5, 18-213689-6	
Perfluoroalkylsulfonic acids	
PFPPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHpA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid

Analyte	Full Name
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid

Any tests marked with * are not accredited for specific matrices or analytes.

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Food and Environmental Submission Form/Chain of Custody

Customer Details

Company Name: * Taranaki Regional Council

Contact Person: * Callum Mackenzie

Email: * callum.mackenzie@trc.govt.nz

Contact Phone No.: * 06 765 7127

Address:

Submission Ref.:

Purchase Order No.: 73494

Contract/Quote No.:

Reporting Details

Report Results To: * sean.hudgens@aecom.com

Extra Copies To:

Report each sample separately? *

If multiple samples are listed below, tick yes to receive an individual CoA for each sample.

☐ Yes

☒ No

Sample Sent By (Name): * Rebecca Joyce Signed By: *

Date/Time Dispatched:

Condition sample(s) dispatched in: ☐ Ambient ☐ Chilled ☐ Frozen

☐ Quarantine (include a copy of the MPI Import Permit/Transfer Form stating country of origin)

☐ Return sample(s) after analysis (Courier fees apply)

NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples? ☐ Yes

Are samples hazardous to health? * ☐ Yes

☐ No

Water samples submitted? * ☐ Potable

☒ Non-Potable

Submission Label



18-212532

AsureQuality Limited

Wellington Laboratory

1C Quadrant Drive, Waiwhetu

Lower Hutt 5010

New Zealand

Tel: +64 4 570 8359

Email: GracefieldSR@asurequality.com

Urgency Details *

☒ Normal Turn-around-time (TAT)

☐ Urgent Service (please select from options below)

☐ Half quoted TAT (50% surcharge)

☐ Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

Sample Name* (unique sample identifier)	Sample Type* (Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)	Sample Description (additional sample information, to appear on report)	Sampled Date (used to determine holding time, if applicable)	Testing Requirements* (test or compounds to be tested for)	AQ Ref. only
GW21	Groundwater	Groundwater	21/08/18	DX - PFCS01	
GW22					
GW31					
GW33					
GW37					
Control 01					
Control 02					
Control 03					

*Required information

Comments/Additional Information:

Received By (Name): * Lauren Mockett

Signed By: *

7:30
23/08/18
12 C

NZ Couriers



LB 09801069

Certificate of Analysis

Final Report

Sean Hudgens
AECOM Consulting Services - Wellington
PO Box 27277
Wellington 6141
New Zealand

PO Number: 73494

Submitted by:
 Taranaki Regional Council
 Private Bag 713
 Stratford 4352
 New Zealand

Report Issued: 13-Sep-2018

AsureQuality Reference: **18-213406**

Sample(s) Received: 23-Aug-2018 07:30

Results

The tests were performed on the samples as received.

Customer Sample Name: GW3 **AsureQuality ID:** 18-213406-1

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 22-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPtS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.46	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.29	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.046	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality's standard terms of business apply to the analysis set out in this report.

Report Number: 1234867

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Test	Result	Unit	Method Reference
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.051	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	98	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	117	%	AsureQuality Method (LC-MS/MS)
M4PFBA	NR	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	85	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	87	%	AsureQuality Method (LC-MS/MS)
MPFHpA	98	%	AsureQuality Method (LC-MS/MS)
M8PFOA	49	%	AsureQuality Method (LC-MS/MS)
M9PFNA	99	%	AsureQuality Method (LC-MS/MS)
M6PFDA	124	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	181 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	218 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	NR	%	AsureQuality Method (LC-MS/MS)
MPFOSA	86	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	125	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	129	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	45	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	63	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	105	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	86	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	104	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: GW5

AsureQuality ID: 18-213406-2

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 22-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPrS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFBS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
di-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA *	0.12	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA *	0.056	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFOA *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS *	106	%	AsureQuality Method (LC-MS/MS)
M3PFHxS *	105	%	AsureQuality Method (LC-MS/MS)
M8PFOS *	108	%	AsureQuality Method (LC-MS/MS)
M4PFBA *	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA *	107	%	AsureQuality Method (LC-MS/MS)
M5PFHxA *	105	%	AsureQuality Method (LC-MS/MS)
MPFHpA *	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA *	104	%	AsureQuality Method (LC-MS/MS)
M9PFNA *	115	%	AsureQuality Method (LC-MS/MS)
M6PFDA *	112	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M7PFUnDA *	110	%	AsureQuality Method (LC-MS/MS)
MPFDoDA *	102	%	AsureQuality Method (LC-MS/MS)
MPFTeDA *	106	%	AsureQuality Method (LC-MS/MS)
MPFOA *	111	%	AsureQuality Method (LC-MS/MS)
DNEtFOA *	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOA *	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOAA *	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOAA *	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE *	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE *	111	%	AsureQuality Method (LC-MS/MS)
M4:2FTS *	111	%	AsureQuality Method (LC-MS/MS)
M6:2FTS *	112	%	AsureQuality Method (LC-MS/MS)
M8:2FTS *	103	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: GW8A

AsureQuality ID: 18-213406-3

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 22-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPoS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0012	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.0086	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.020	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.012	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0040	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NEtFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	112	%	AsureQuality Method (LC-MS/MS)
M8PFOS	124	%	AsureQuality Method (LC-MS/MS)
M4PFBA	44	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	106	%	AsureQuality Method (LC-MS/MS)
MPFHpA	112	%	AsureQuality Method (LC-MS/MS)
M8PFOA	74	%	AsureQuality Method (LC-MS/MS)
M9PFNA	106	%	AsureQuality Method (LC-MS/MS)
M6PFDA	123	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	188 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDODA	NR	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	NR	%	AsureQuality Method (LC-MS/MS)
MPFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	158 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	140	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	121	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	122	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	140	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	101	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	129	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: GW10

AsureQuality ID: 18-213406-4

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 22-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPoS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPoS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.055	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.21	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.12	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.048	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0081	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.028	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	108	%	AsureQuality Method (LC-MS/MS)
M8PFOS	121	%	AsureQuality Method (LC-MS/MS)
M4PFBA	48	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	97	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	112	%	AsureQuality Method (LC-MS/MS)
MPFHpA	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA	66	%	AsureQuality Method (LC-MS/MS)
M9PFNA	105	%	AsureQuality Method (LC-MS/MS)
M6PFDA	120	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	112	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	124	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	202 (R)	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
MPFOSA	107	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	78	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	88	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	126	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	136	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	101	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	89	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	126	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	114	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: GW46

AsureQuality ID: 18-213406-5

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 22-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPoS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFBS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA *	0.24	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA *	0.14	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFOA *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS *	0.12	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS *	101	%	AsureQuality Method (LC-MS/MS)
M3PFHxS *	105	%	AsureQuality Method (LC-MS/MS)
M8PFOS *	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA *	105	%	AsureQuality Method (LC-MS/MS)
M5PFPeA *	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA *	103	%	AsureQuality Method (LC-MS/MS)
MPFHpA *	104	%	AsureQuality Method (LC-MS/MS)
M8PFOA *	103	%	AsureQuality Method (LC-MS/MS)
M9PFNA *	112	%	AsureQuality Method (LC-MS/MS)
M6PFDA *	111	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA *	101	%	AsureQuality Method (LC-MS/MS)
MPFDoDA *	107	%	AsureQuality Method (LC-MS/MS)
MPFTeDA *	119	%	AsureQuality Method (LC-MS/MS)
MPFOSA *	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA *	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA *	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA *	105	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA *	107	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE *	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE *	105	%	AsureQuality Method (LC-MS/MS)
M4:2FTS *	108	%	AsureQuality Method (LC-MS/MS)
M6:2FTS *	108	%	AsureQuality Method (LC-MS/MS)
M8:2FTS *	101	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: GW47

AsureQuality ID: 18-213406-6

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 22-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPrS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFBS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
di-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFOA *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS *	103	%	AsureQuality Method (LC-MS/MS)
M3PFHxS *	106	%	AsureQuality Method (LC-MS/MS)
M8PFOS *	110	%	AsureQuality Method (LC-MS/MS)
M4PFBA *	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA *	109	%	AsureQuality Method (LC-MS/MS)
M5PFHxA *	103	%	AsureQuality Method (LC-MS/MS)
MPFHpA *	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA *	105	%	AsureQuality Method (LC-MS/MS)
M9PFNA *	110	%	AsureQuality Method (LC-MS/MS)
M6PFDA *	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA *	102	%	AsureQuality Method (LC-MS/MS)
MPFDODA *	105	%	AsureQuality Method (LC-MS/MS)
MPFTeDA *	85	%	AsureQuality Method (LC-MS/MS)
MPFOSA *	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA *	108	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNMeFOSA *	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA *	107	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA *	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE *	112	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE *	102	%	AsureQuality Method (LC-MS/MS)
M4:2FTS *	112	%	AsureQuality Method (LC-MS/MS)
M6:2FTS *	113	%	AsureQuality Method (LC-MS/MS)
M8:2FTS *	98	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: Control02

AsureQuality ID: 18-213406-7

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 22-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPtS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFBS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFOA *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS *	108	%	AsureQuality Method (LC-MS/MS)
M3PFHxS *	110	%	AsureQuality Method (LC-MS/MS)
M8PFOS *	116	%	AsureQuality Method (LC-MS/MS)
M4PFBA *	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA *	109	%	AsureQuality Method (LC-MS/MS)
M5PFHxA *	109	%	AsureQuality Method (LC-MS/MS)
MPFHpA *	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA *	105	%	AsureQuality Method (LC-MS/MS)
M9PFNA *	119	%	AsureQuality Method (LC-MS/MS)
M6PFDA *	114	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA *	111	%	AsureQuality Method (LC-MS/MS)
MPFDoDA *	116	%	AsureQuality Method (LC-MS/MS)
MPFTeDA *	147	%	AsureQuality Method (LC-MS/MS)
MPFOSA *	112	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA *	109	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA *	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA *	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA *	112	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE *	113	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE *	109	%	AsureQuality Method (LC-MS/MS)
M4:2FTS *	112	%	AsureQuality Method (LC-MS/MS)
M6:2FTS *	116	%	AsureQuality Method (LC-MS/MS)
M8:2FTS *	101	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: Duplicate of 18-213406-1

AsureQuality ID: 18-213406-8

Sample Description: GW3 dup

Sample Condition: Acceptable

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.46	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.28	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.045	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.050	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	83	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	88	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	NR	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	72	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	74	%	AsureQuality Method (LC-MS/MS)
MPFHpA	84	%	AsureQuality Method (LC-MS/MS)
M8PFOA	42	%	AsureQuality Method (LC-MS/MS)
M9PFNA	82	%	AsureQuality Method (LC-MS/MS)
M6PFDA	123	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	205 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	NR	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	NR	%	AsureQuality Method (LC-MS/MS)
MPFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	162 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	139	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNEtFOSE	236 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	153 (R)	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	80	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	69	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	97	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

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Relates to sample(s) 18-213406-1, 18-213406-3, 18-213406-8

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPoS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	89	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	92	%	AsureQuality Method (LC-MS/MS)
M8PFOS	90	%	AsureQuality Method (LC-MS/MS)
M4PFBA	88	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	87	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	89	%	AsureQuality Method (LC-MS/MS)
MPFHpA	89	%	AsureQuality Method (LC-MS/MS)
M8PFOA	89	%	AsureQuality Method (LC-MS/MS)
M9PFNA	86	%	AsureQuality Method (LC-MS/MS)
M6PFDA	92	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	138	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	285 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	NR	%	AsureQuality Method (LC-MS/MS)
MPFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	NR	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	130	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	235 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	150	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	82	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	84	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	73	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

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Relates to sample(s) 18-213406-2, 18-213406-5, 18-213406-6, 18-213406-7

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water - High Level			
Perfluoroalkylsulfonic acids			
PFPtS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
di-PFOS (5)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<5.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<5.0	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	103	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	105	%	AsureQuality Method (LC-MS/MS)
M8PFOS	107	%	AsureQuality Method (LC-MS/MS)
M4PFBA	104	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	103	%	AsureQuality Method (LC-MS/MS)
M8PFOA	101	%	AsureQuality Method (LC-MS/MS)
M9PFNA	108	%	AsureQuality Method (LC-MS/MS)
M6PFDA	104	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	111	%	AsureQuality Method (LC-MS/MS)
MPFDODA	104	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
MPFTeDA	51	%	AsureQuality Method (LC-MS/MS)
MPFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	106	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	107	%	AsureQuality Method (LC-MS/MS)

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Relates to sample(s) 18-213406-2, 18-213406-5, 18-213406-6, 18-213406-7

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	107	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	110	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	107	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	114	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	103	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	39	%	AsureQuality Method (LC-MS/MS)
MPFOSA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	97	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	102	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	103	%	AsureQuality Method (LC-MS/MS)

Blank

Relates to sample(s) 18-213406-4

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPoS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	115	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	112	%	AsureQuality Method (LC-MS/MS)
M8PFOS	113	%	AsureQuality Method (LC-MS/MS)
M4PFBA	125	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	114	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	121	%	AsureQuality Method (LC-MS/MS)
MPFHpA	115	%	AsureQuality Method (LC-MS/MS)
M8PFOA	119	%	AsureQuality Method (LC-MS/MS)
M9PFNA	117	%	AsureQuality Method (LC-MS/MS)
M6PFDA	114	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M7PFUnDA	106	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	136	%	AsureQuality Method (LC-MS/MS)
MPFOA	118	%	AsureQuality Method (LC-MS/MS)
DNEtFOA	119	%	AsureQuality Method (LC-MS/MS)
DNMeFOA	134	%	AsureQuality Method (LC-MS/MS)
DNEtFOAA	120	%	AsureQuality Method (LC-MS/MS)
DNMeFOAA	131	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	123	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	133	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	120	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	130	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	126	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
DX-PFCS01, 03-SUITE_B	AsureQuality Method (LC-MS/MS)	IANZ	Cameron Evans
<p>di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)</p> <p>mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)</p> <p>L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)</p> <p>Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)</p> <p>di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)</p> <p>mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)</p> <p>L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)</p> <p>Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)</p> <p>Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)</p> <p>For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.</p> <p>Reported results are corrected for internal standard recovery</p> <p>Any tests marked with * are not accredited for specific matrices or analytes.</p> <p>Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.</p> <p>NR = Not Reportable</p>			



Cameron Evans

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Water - AsureQuality Method (LC-MS/MS)

Analyte **LOR (µg/L)**

Listing applies to samples: 18-213406-2, 18-213406-5, 18-213406-6, 18-213406-7

Perfluoroalkylsulfonic acids

PFPPrS*	0.0010
PFBS*	0.0010
PFPeS*	0.0010
di-PFHxS (1)*	0.0010
mono-PFHxS (1)*	0.0010
L-PFHxS (1)*	0.0010
Total PFHxS (3)*	0.0010
PFHpS*	0.0010
di-PFOS (5)*	0.0010
mono-PFOS (5)*	0.0010
L-PFOS (5)*	0.0010
Total PFOS (7)*	0.0010
Sum PFHxS+PFOS (1)*	0.0010
PFNS*	0.0010
PFDS*	0.0010

Perfluoroalkylcarboxylic acids

PFBA*	0.0010
PFPeA*	0.0010
PFHxA*	0.0010
PFHpA*	0.0010
PFOA*	0.0010
PFNA*	0.0010
PFDA*	0.0010
PFUnDA*	0.0010
PFDoDA*	0.0010
PFTTrDA*	0.0010
PFTeDA*	0.0010

Perfluorooctanesulfonamides

PFOSA*	0.0010
NEtFOSA-M*	0.0010
NMeFOSA-M*	0.0010

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA*	0.0010
NMeFOSAA*	0.0010

Perfluorooctanesulfonamidoethanols

NEtFOSE-M*	0.0010
NMeFOSE-M*	0.0010

Telomere Sulfonic acids

4:2 FTS*	0.0010
6:2 FTS*	0.0010
8:2 FTS*	0.0010

Listing applies to samples: 18-213406-1, 18-213406-3, 18-213406-4, 18-213406-8

PFPPrS	0.0010
PFBS	0.0010
PFPeS	0.0010

di-PFHxS (1)	0.0010
mono-PFHxS (1)	0.0010
L-PFHxS (1)	0.0010
Total PFHxS (3)	0.0010
PFHpS	0.0010
di-PFOS (5)	0.0010
mono-PFOS (5)	0.0010
L-PFOS (5)	0.0010
Total PFOS (7)	0.0010
Sum PFHxS+PFOS (1)	0.0010
PFNS	0.0010
PFDS	0.0010

Perfluoroalkylcarboxylic acids

PFBA	NR
PFPeA	0.0010
PFHxA	0.0010
PFHpA	0.0010
PFOA	0.0010
PFNA	0.0010
PFDA	0.0010
PFUnDA	0.0010
PFDoDA	NR
PFTTrDA	NR
PFTeDA	NR

Perfluorooctanesulfonamides

PFOSA	0.0010
NEtFOSA-M	NR
NMeFOSA-M	NR

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA	0.0010
NMeFOSAA	0.0010

Perfluorooctanesulfonamidoethanols

NEtFOSE-M	0.0010
NMeFOSE-M	0.0010

Telomere Sulfonic acids

4:2 FTS	0.0010
6:2 FTS	0.0010
8:2 FTS	0.0010

Analyte Definitions**Poly- and Perfluorinated Alkyl Substances (PFAS) in Water - AsureQuality Method (LC-MS/MS)****Analyte Full Name**

Listing applies to samples: 18-213406-2, 18-213406-5, 18-213406-6, 18-213406-7

Perfluoroalkylsulfonic acids

PFPrS*	Perfluoro-1-propanesulfonic acid
PFBS*	Perfluoro-1-butanesulfonic acid
PFPeS*	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)*	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)*	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)*	Linear Perfluorohexanesulfonic acid
PFHpS*	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)*	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)*	Total Perfluoromethylheptane sulfonic acids

Analyte	Full Name
L-PFOS (5)*	Linear Perfluorooctanesulfonic acid
PFNS*	Perfluoro-1-nonanesulfonic acid
PFDS*	Perfluoro-1-decanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA*	Perfluoro-n-butanoic acid
PFPeA*	Perfluoro-n-pentanoic acid
PFHxA*	Perfluoro-n-hexanoic acid
PFHpA*	Perfluoro-n-heptanoic acid
PFOA*	Perfluoro-n-octanoic acid
PFNA*	Perfluoro-n-nonanoic acid
PFDA*	Perfluoro-n-decanoic acid
PFUnDA*	Perfluoro-n-undecanoic acid
PFDoDA*	Perfluoro-n-dodecanoic acid
PFTTrDA*	Perfluoro-n-tridecanoic acid
PFTeDA*	Perfluoro-n-tetradecanoic acid
Perfluorooctanesulfonamides	
PFOSA*	Perfluoro-1-octanesulfonamide
NEtFOSA-M*	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M*	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA*	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA*	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M*	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M*	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS*	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS*	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS*	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
Internal Standards	
M3PFBS*	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS*	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS*	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA*	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA*	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA*	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHpA*	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA*	Perfluoro-n-[13C8]octanoic acid
M9PFNA*	Perfluoro-n-[13C9]nonanoic acid
M6PFDA*	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA*	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA*	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA*	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA*	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA*	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA*	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA*	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA*	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE*	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE*	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS*	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS*	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS*	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid

Analyte	Full Name
Listing applies to samples: 18-213406-1, 18-213406-3, 18-213406-4, 18-213406-8	
Perfluoroalkylsulfonic acids	
PFPPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHpA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid

Analyte	Full Name
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid

Any tests marked with * are not accredited for specific matrices or analytes.

LOR = Limit of Reporting	LOD = Limit of Detection	NR = Not Reportable
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Food and Environmental Submission Form/Chain of Custody

Customer Details

Company Name: * Taranaki Regional Council

Contact Person: * Callum Mackenzie

Email: * callum.mackenzie@trc.govt.nz

Contact Phone No.: * 06 765 7127

Address:

Submission Ref.:

Purchase Order No.: 73494

Contract/Quote No.:

Reporting Details

Report Results To: * sean.hudgens@aecom.com

Extra Copies To:

Report each sample separately? *

If multiple samples are listed below, tick yes to receive an Individual CoA for each sample.

☐ Yes

☒ No

Sample Sent By (Name): * Rebecca Joyce Signed By: *

Date/Time Dispatched:

Condition sample(s) dispatched in: ☐ Ambient ☐ Chilled ☐ Frozen

☐ Quarantine (include a copy of the MPI Import Permit/Transfer Form stating country of origin)

☐ Return sample(s) after analysis (Courier fees apply)

NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples? ☐ Yes

Are samples hazardous to health? * ☐ Yes

☐ No

Water samples submitted? * ☐ Potable

☒ Non-Potable

Submission Label



18-212432

AsureQuality Limited

Wellington Laboratory

1C Quadrant Drive, Waiwhetu

Lower Hutt 5010

New Zealand

Tel: +64 4 570 8359

Email: GracefieldSR@asurequality.com

Urgency Details *

☒ Normal Turn-around-time (TAT)

☐ Urgent Service (please select from options below)

☐ Half quoted TAT (50% surcharge)

☐ Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

Sample Name* (unique sample identifier)	Sample Type* (Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)	Sample Description (additional sample information, to appear on report)	Sampled Date (used to determine holding time, if applicable)	Testing Requirements* (test or compounds to be tested for)	AQ Ref. only
GW3	Groundwater	Groundwater	22/08/18	DX - PFCS01	
GW5					
GW8A					
GW10					
GW46					
GW47					
Control 02					

*Required information

Comments/Additional Information:

Received By (Name): * Lauren Mockett

Signed By: *

7:30
23/08/18
14 C

NZ Couriers

LB 09801069

Certificate of Analysis

Final Report

Sean Hudgens
AECOM Consulting Services - Wellington
PO Box 27277
Wellington 6141
New Zealand

PO Number: 73494

Submitted by:
 Taranaki Regional Council
 Private Bag 713
 Stratford 4352
 New Zealand

Report Issued: 19-Sep-2018

AsureQuality Reference: **18-213132**

Sample(s) Received: 24-Aug-2018 07:45

Results

The tests were performed on the samples as received.

Customer Sample Name: GWOMI

AsureQuality ID: 18-213132-1

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 23-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPtS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.039	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.15	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.15	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.032	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0046	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality's standard terms of business apply to the analysis set out in this report.

Report Number: 1241689

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Test	Result	Unit	Method Reference
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.014	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	98	%	AsureQuality Method (LC-MS/MS)
M8PFOS	111	%	AsureQuality Method (LC-MS/MS)
M4PFBA	72	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	95	%	AsureQuality Method (LC-MS/MS)
MPFHpA	104	%	AsureQuality Method (LC-MS/MS)
M8PFOA	92	%	AsureQuality Method (LC-MS/MS)
M9PFNA	104	%	AsureQuality Method (LC-MS/MS)
M6PFDA	104	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	108	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	101	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	49	%	AsureQuality Method (LC-MS/MS)
MPFOSA	89	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	74	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	97	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	81	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	91	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	80	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	115	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: GW9AA

AsureQuality ID: 18-213132-2

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 23-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPrS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFBS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
mono-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA *	0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA *	0.077	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFOA *	0.020	µg/L	AsureQuality Method (LC-MS/MS)
PFNA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA *	<5.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA *	<5.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA *	<20	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS *	0.12	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS *	103	%	AsureQuality Method (LC-MS/MS)
M3PFHxS *	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS *	102	%	AsureQuality Method (LC-MS/MS)
M4PFBA *	90	%	AsureQuality Method (LC-MS/MS)
M5PFPeA *	93	%	AsureQuality Method (LC-MS/MS)
M5PFHxA *	106	%	AsureQuality Method (LC-MS/MS)
MPFHpA *	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA *	105	%	AsureQuality Method (LC-MS/MS)
M9PFNA *	109	%	AsureQuality Method (LC-MS/MS)
M6PFDA *	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA *	103	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
MPFDoDA *	102	%	AsureQuality Method (LC-MS/MS)
MPFTeDA *	111	%	AsureQuality Method (LC-MS/MS)
MPFOSA *	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA *	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA *	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA *	90	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA *	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE *	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE *	103	%	AsureQuality Method (LC-MS/MS)
M4:2FTS *	120	%	AsureQuality Method (LC-MS/MS)
M6:2FTS *	115	%	AsureQuality Method (LC-MS/MS)
M8:2FTS *	124	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: GW9B

AsureQuality ID: 18-213132-3

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 23-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPtS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.0015	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.0015	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.0018	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0048	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.0066	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.0081	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.090	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.33	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.16	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.12	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.028	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.017	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	0.016	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSA-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.17	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	0.049	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	109	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	108	%	AsureQuality Method (LC-MS/MS)
M8PFOS	129	%	AsureQuality Method (LC-MS/MS)
M4PFBA	68	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	107	%	AsureQuality Method (LC-MS/MS)
MPFHpA	113	%	AsureQuality Method (LC-MS/MS)
M8PFOA	96	%	AsureQuality Method (LC-MS/MS)
M9PFNA	121	%	AsureQuality Method (LC-MS/MS)
M6PFDA	127	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	113	%	AsureQuality Method (LC-MS/MS)
MPFDODA	86	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	48	%	AsureQuality Method (LC-MS/MS)
MPFOSA	101	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	62	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	73	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	107	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	127	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	85	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	94	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	159 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	101	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	148	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: GW28

AsureQuality ID: 18-213132-4

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 23-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPtS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFBS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1) *	0.015	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3) *	0.015	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
PFHpS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5) *	0.022	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7) *	0.022	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1) *	0.037	µg/L	AsureQuality Method (LC-MS/MS)
PFNS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA *	0.074	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA *	0.052	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFOA *	0.018	µg/L	AsureQuality Method (LC-MS/MS)
PFNA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA *	<5.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA *	<5.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA *	<20	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M *	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS *	103	%	AsureQuality Method (LC-MS/MS)
M3PFHxS *	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS *	101	%	AsureQuality Method (LC-MS/MS)
M4PFBA *	99	%	AsureQuality Method (LC-MS/MS)
M5PFPeA *	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA *	110	%	AsureQuality Method (LC-MS/MS)
MPFHpA *	110	%	AsureQuality Method (LC-MS/MS)
M8PFOA *	102	%	AsureQuality Method (LC-MS/MS)
M9PFNA *	103	%	AsureQuality Method (LC-MS/MS)
M6PFDA *	109	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA *	105	%	AsureQuality Method (LC-MS/MS)
MPFDoDA *	106	%	AsureQuality Method (LC-MS/MS)
MPFTeDA *	112	%	AsureQuality Method (LC-MS/MS)
MPFOSA *	104	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNEtFOSA *	107	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA *	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA *	98	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA *	96	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE *	105	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE *	103	%	AsureQuality Method (LC-MS/MS)
M4:2FTS *	117	%	AsureQuality Method (LC-MS/MS)
M6:2FTS *	113	%	AsureQuality Method (LC-MS/MS)
M8:2FTS *	112	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: GW29

AsureQuality ID: 18-213132-5

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 23-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPoS	0.0018	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.011	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.027	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.050	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.27	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.32	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0080	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0065	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.10	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.31	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.42	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.74	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.052	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.18	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.74	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.064	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.044	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0018	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSAA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.023	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	99	%	AsureQuality Method (LC-MS/MS)
M4PFBA	125	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	108	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	88	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	102	%	AsureQuality Method (LC-MS/MS)
M9PFNA	88	%	AsureQuality Method (LC-MS/MS)
M6PFDA	94	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	80	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	56	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	48	%	AsureQuality Method (LC-MS/MS)
MPFOSA	87	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	50	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	57	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	55	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	68	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	127	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	83	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	102	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: QAQC08

AsureQuality ID: 18-213132-6

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 23-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPoS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.0015	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.0015	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.0017	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
L-PFOS (5)	0.0045	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.0062	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.0077	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.091	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.33	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.17	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.12	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.028	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.017	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	0.016	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.17	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	103	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	105	%	AsureQuality Method (LC-MS/MS)
M8PFOS	127	%	AsureQuality Method (LC-MS/MS)
M4PFBA	61	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	94	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	104	%	AsureQuality Method (LC-MS/MS)
M8PFOA	89	%	AsureQuality Method (LC-MS/MS)
M9PFNA	120	%	AsureQuality Method (LC-MS/MS)
M6PFDA	127	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	124	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	108	%	AsureQuality Method (LC-MS/MS)
MPFTTeDA	56	%	AsureQuality Method (LC-MS/MS)
MPFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	90	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	90	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	108	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNMeFOSAA	125	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	96	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	96	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	140	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	139	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 18-213132-1, 18-213132-3, 18-213132-5, 18-213132-6

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSAA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)

Blank

Relates to sample(s) 18-213132-2, 18-213132-4

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water - High Level			
Perfluoroalkylsulfonic acids			
PFPtS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
mono-PFOS (5)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	<5.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<5.0	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<20	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<1.0	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	104	%	AsureQuality Method (LC-MS/MS)
M4PFBA	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	101	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	104	%	AsureQuality Method (LC-MS/MS)
M9PFNA	105	%	AsureQuality Method (LC-MS/MS)
M6PFDA	106	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	104	%	AsureQuality Method (LC-MS/MS)
MPFDODA	104	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	109	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
MPFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	101	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	107	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
DX-PFCS01, 03-SUITE_B	AsureQuality Method (LC-MS/MS)	IANZ	Cameron Evans
<p>di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)</p> <p>mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)</p> <p>L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)</p> <p>Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)</p> <p>di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)</p> <p>mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)</p> <p>L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)</p> <p>Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)</p> <p>Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)</p> <p>For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.</p> <p>Reported results are corrected for internal standard recovery</p>			
Any tests marked with * are not accredited for specific matrices or analytes.			
Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.			



Cameron Evans

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Water - AsureQuality Method (LC-MS/MS)

Analyte LOR (µg/L)

Listing applies to samples: 18-213132-2, 18-213132-4

Perfluoroalkylsulfonic acids

PFPPrS*	0.0010
PFBS*	0.0010
PFPeS*	0.0010
di-PFHxS (1)*	0.0010
mono-PFHxS (1)*	0.0010
L-PFHxS (1)*	0.0010
Total PFHxS (3)*	0.0010
PFHpS*	0.0010
di-PFOS (5)*	0.0010
mono-PFOS (5)*	0.0010
L-PFOS (5)*	0.0010
Total PFOS (7)*	0.0010
Sum PFHxS+PFOS (1)*	0.0010
PFNS*	0.0010
PFDS*	0.0010

Perfluoroalkylcarboxylic acids

PFBA*	0.0010
PFPeA*	0.0010
PFHxA*	0.0010
PFHpA*	0.0010
PFOA*	0.0010
PFNA*	0.0010
PFDA*	0.0010
PFUnDA*	0.0010
PFDoDA*	0.0010
PFTTrDA*	0.0010
PFTeDA*	0.0010

Perfluorooctanesulfonamides

PFOSA*	0.0010
NEtFOSA-M*	0.0010
NMeFOSA-M*	0.0010

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA*	0.0010
NMeFOSAA*	0.0010

Perfluorooctanesulfonamidoethanols

NEtFOSE-M*	0.0010
NMeFOSE-M*	0.0010

Telomere Sulfonic acids

4:2 FTS*	0.0010
6:2 FTS*	0.0010
8:2 FTS*	0.0010

Listing applies to samples: 18-213132-1, 18-213132-3, 18-213132-5, 18-213132-6

PFPPrS	0.0010
PFBS	0.0010
PFPeS	0.0010

di-PFHxS (1)	0.0010
mono-PFHxS (1)	0.0010
L-PFHxS (1)	0.0010
Total PFHxS (3)	0.0010
PFHpS	0.0010
di-PFOS (5)	0.0010
mono-PFOS (5)	0.0010
L-PFOS (5)	0.0010
Total PFOS (7)	0.0010
Sum PFHxS+PFOS (1)	0.0010
PFNS	0.0010
PFDS	0.0010
Perfluoroalkylcarboxylic acids	
PFBA	0.0010
PFPeA	0.0010
PFHxA	0.0010
PFHpA	0.0010
PFOA	0.0010
PFNA	0.0010
PFDA	0.0010
PFUnDA	0.0010
PFDoDA	0.0010
PFTTrDA	0.0010
PFTeDA	0.0010
Perfluorooctanesulfonamides	
PFOSA	0.0010
NEtFOSA-M	0.0010
NMeFOSA-M	0.0010
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010
NMeFOSAA	0.0010
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010
NMeFOSE-M	0.0010
Telomere Sulfonic acids	
4:2 FTS	0.0010
6:2 FTS	0.0010
8:2 FTS	0.0010

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Water - AsureQuality Method (LC-MS/MS)

Analyte **Full Name**

Listing applies to samples: 18-213132-2, 18-213132-4

Perfluoroalkylsulfonic acids

PFPrS*	Perfluoro-1-propanesulfonic acid
PFBS*	Perfluoro-1-butanesulfonic acid
PFPeS*	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)*	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)*	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)*	Linear Perfluorohexanesulfonic acid
PFHpS*	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)*	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)*	Total Perfluoromethylheptane sulfonic acids

Analyte	Full Name
L-PFOS (5)*	Linear Perfluorooctanesulfonic acid
PFNS*	Perfluoro-1-nonanesulfonic acid
PFDS*	Perfluoro-1-decanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA*	Perfluoro-n-butanoic acid
PFPeA*	Perfluoro-n-pentanoic acid
PFHxA*	Perfluoro-n-hexanoic acid
PFHpA*	Perfluoro-n-heptanoic acid
PFOA*	Perfluoro-n-octanoic acid
PFNA*	Perfluoro-n-nonanoic acid
PFDA*	Perfluoro-n-decanoic acid
PFUnDA*	Perfluoro-n-undecanoic acid
PFDoDA*	Perfluoro-n-dodecanoic acid
PFTTrDA*	Perfluoro-n-tridecanoic acid
PFTeDA*	Perfluoro-n-tetradecanoic acid
Perfluorooctanesulfonamides	
PFOSA*	Perfluoro-1-octanesulfonamide
NEtFOSA-M*	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M*	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA*	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA*	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M*	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M*	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS*	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS*	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS*	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
Internal Standards	
M3PFBS*	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS*	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS*	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA*	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA*	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA*	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHpA*	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA*	Perfluoro-n-[13C8]octanoic acid
M9PFNA*	Perfluoro-n-[13C9]nonanoic acid
M6PFDA*	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA*	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA*	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA*	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA*	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA*	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA*	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA*	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA*	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE*	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE*	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS*	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS*	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS*	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid

Analyte	Full Name
Listing applies to samples: 18-213132-1, 18-213132-3, 18-213132-5, 18-213132-6	
Perfluoroalkylsulfonic acids	
PFPPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDoDA	Perfluoro-n-dodecanoic acid
PFTTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHpA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid

Analyte	Full Name
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid

Any tests marked with * are not accredited for specific matrices or analytes.

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Food and Environmental Submission Form/Chain of Custody

Customer Details

Company Name: * **TARANAKI**
 Contact Person: * **REGIONAL COUNCIL**
 Email: * **Callum Mackenzie**
 Contact Phone No.: * **06 7657127**
 Address:

Submission Ref.:

Purchase Order No.: **73494**

Contract/Quote No.:

Reporting Details

Report Results To: * **sean.hudgens@aecon.com**

Extra Copies To:

Report each sample separately? *

If multiple samples are listed below, tick yes to receive an individual CoA for each sample.

☐ Yes

☒ No

Sample Sent By (Name): * **REBECCA**

Signed By: *

Date/Time Dispatched:

Condition sample(s) dispatched in:

☐ Ambient

☐ Chilled

☐ Frozen

☐ Quarantine (include a copy of the MPI Import Permit/Transfer Form stating country of origin)

☐ Return sample(s) after analysis (Courier fees apply)

NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples?

☐ Yes

Are samples hazardous to health? *

☐ Yes

☐ No

Water samples submitted? *

☐ Potable

☒ Non-Potable



Submission Label

18-213132

AsureQuality Limited

Wellington Laboratory

1C Quadrant Drive, Waiwhetu

Lower Hutt 5010

New Zealand

Tel: +64 4 570 8359

Email: GracefieldSR@asurequality.com

Urgency Details *

☐ Normal Turn-around-time (TAT)

☐ Urgent Service (please select from options below)

☐ Half quoted TAT (50% surcharge)

☐ Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

Sample Name* (unique sample identifier)	Sample Type* (Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)	Sample Description (additional sample information, to appear on report)	Sampled Date (used to determine holding time, if applicable)	Testing Requirements* (test or compounds to be tested for)	AQ Ref. only
GW0M1	GROUNDWATER	GROUNDWATER	23/8/18	HOLD COLD	
GW9AA					
GW9B					
GW28					
GW29					
QAQCL08					
QAQCL09					
QAQCL0					

*Required information

Comments/Additional Information:

Received By (Name): * **Lauren Mockett**

Signed By: *

7:45
24/08/18
16 C

NZ Couriers

LB 09627766

Certificate of Analysis

Final Report

Sean Hudgens
AECOM Consulting Services - Wellington
PO Box 27277
Wellington 6141
New Zealand

PO Number: 73494

Submitted by:
 Taranaki Regional Council
 Private Bag 713
 Stratford 4352
 New Zealand

Report Issued: 20-Sep-2018

AsureQuality Reference: **18-213620**

Sample(s) Received: 23-Aug-2018 07:30

Results

The tests were performed on the samples as received.

Customer Sample Name: QAQC01

AsureQuality ID: 18-213620-1

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 21-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPtS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

AsureQuality has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality's standard terms of business apply to the analysis set out in this report.

Report Number: 1243429

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Test	Result	Unit	Method Reference
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	81	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	52	%	AsureQuality Method (LC-MS/MS)
M8PFOS	55	%	AsureQuality Method (LC-MS/MS)
M4PFBA	77	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	93	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	85	%	AsureQuality Method (LC-MS/MS)
MPFHpA	73	%	AsureQuality Method (LC-MS/MS)
M8PFOA	59	%	AsureQuality Method (LC-MS/MS)
M9PFNA	58	%	AsureQuality Method (LC-MS/MS)
M6PFDA	59	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	87	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	88	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	62	%	AsureQuality Method (LC-MS/MS)
MPFOSA	73	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	78	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	69	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	70	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	76	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	77	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	92	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	60	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	58	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: QAQC04

AsureQuality ID: 18-213620-4

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 21-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	87	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	74	%	AsureQuality Method (LC-MS/MS)
M8PFOS	74	%	AsureQuality Method (LC-MS/MS)
M4PFBA	96	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	92	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	87	%	AsureQuality Method (LC-MS/MS)
MPFHpA	83	%	AsureQuality Method (LC-MS/MS)
M8PFOA	78	%	AsureQuality Method (LC-MS/MS)
M9PFNA	73	%	AsureQuality Method (LC-MS/MS)
M6PFDA	71	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	85	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
MPFDoDA	82	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	87	%	AsureQuality Method (LC-MS/MS)
MPFOA	88	%	AsureQuality Method (LC-MS/MS)
DNEtFOA	88	%	AsureQuality Method (LC-MS/MS)
DNMeFOA	72	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	77	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	75	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	82	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	83	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	87	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	65	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	73	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: QAQC05

AsureQuality ID: 18-213620-5

Sample Description: Groundwater

Sample Condition: Acceptable

Sampled Date: 22-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPtS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFBS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFOA *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA *	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA *	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M *	<0.20	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSA-M *	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS *	107	%	AsureQuality Method (LC-MS/MS)
M3PFHxS *	112	%	AsureQuality Method (LC-MS/MS)
M8PFOS *	111	%	AsureQuality Method (LC-MS/MS)
M4PFBA *	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA *	103	%	AsureQuality Method (LC-MS/MS)
M5PFHxA *	108	%	AsureQuality Method (LC-MS/MS)
MPFHpA *	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA *	111	%	AsureQuality Method (LC-MS/MS)
M9PFNA *	116	%	AsureQuality Method (LC-MS/MS)
M6PFDA *	107	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA *	111	%	AsureQuality Method (LC-MS/MS)
MPFDODA *	113	%	AsureQuality Method (LC-MS/MS)
MPFTeDA *	103	%	AsureQuality Method (LC-MS/MS)
MPFOSA *	110	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA *	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA *	116	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA *	107	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA *	107	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE *	115	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE *	114	%	AsureQuality Method (LC-MS/MS)
M4:2FTS *	110	%	AsureQuality Method (LC-MS/MS)
M6:2FTS *	112	%	AsureQuality Method (LC-MS/MS)
M8:2FTS *	106	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: Duplicate of 18-213620-5A

AsureQuality ID: 18-213620-8

Sample Description: QAQC05

Sample Condition: Acceptable

Sampled Date: 22-Aug-2018

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPrS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFBS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
PFHpS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1) *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFOA *	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDA *	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA *	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA *	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M *	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M *	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS *	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS *	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS *	111	%	AsureQuality Method (LC-MS/MS)
M8PFOS *	111	%	AsureQuality Method (LC-MS/MS)
M4PFBA *	103	%	AsureQuality Method (LC-MS/MS)
M5PFPeA *	103	%	AsureQuality Method (LC-MS/MS)
M5PFHxA *	106	%	AsureQuality Method (LC-MS/MS)
MPFHpA *	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA *	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA *	110	%	AsureQuality Method (LC-MS/MS)
M6PFDA *	115	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA *	107	%	AsureQuality Method (LC-MS/MS)
MPFDoDA *	119	%	AsureQuality Method (LC-MS/MS)
MPFTeDA *	117	%	AsureQuality Method (LC-MS/MS)
MPFOSA *	108	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNEtFOSA *	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA *	112	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA *	109	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA *	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE *	115	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE *	114	%	AsureQuality Method (LC-MS/MS)
M4:2FTS *	107	%	AsureQuality Method (LC-MS/MS)
M6:2FTS *	108	%	AsureQuality Method (LC-MS/MS)
M8:2FTS *	105	%	AsureQuality Method (LC-MS/MS)

QC Results

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Relates to sample(s) 18-213620-1, 18-213620-4

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0050	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSA-M	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	90	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	72	%	AsureQuality Method (LC-MS/MS)
M8PFOS	66	%	AsureQuality Method (LC-MS/MS)
M4PFBA	98	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	96	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	94	%	AsureQuality Method (LC-MS/MS)
MPFHpA	86	%	AsureQuality Method (LC-MS/MS)
M8PFOA	76	%	AsureQuality Method (LC-MS/MS)
M9PFNA	70	%	AsureQuality Method (LC-MS/MS)
M6PFDA	71	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	84	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	94	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	86	%	AsureQuality Method (LC-MS/MS)
MPFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	69	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	64	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	83	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	83	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	82	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	70	%	AsureQuality Method (LC-MS/MS)

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Relates to sample(s) 18-213620-5, 18-213620-8

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
Perfluoroalkylsulfonic acids			
PFPoS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Total PFHxS (3)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFDODA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTTrDA	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	109	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	113	%	AsureQuality Method (LC-MS/MS)
M8PFOS	113	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	107	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	112	%	AsureQuality Method (LC-MS/MS)
M9PFNA	112	%	AsureQuality Method (LC-MS/MS)
M6PFDA	114	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M7PFUnDA	112	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	110	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	104	%	AsureQuality Method (LC-MS/MS)
MPFOA	111	%	AsureQuality Method (LC-MS/MS)
DNEtFOA	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOA	111	%	AsureQuality Method (LC-MS/MS)
DNEtFOAA	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOAA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	112	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	112	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	116	%	AsureQuality Method (LC-MS/MS)

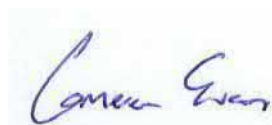
Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substances (PFAS) in Water			
DX-PFCS01, 03-SUITE_B	AsureQuality Method (LC-MS/MS)	IANZ	Cameron Evans
di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition) mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition) L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition) Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1) di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition) mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition) L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition) Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5) Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7) For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample. Reported results are corrected for internal standard recovery			

Any tests marked with * are not accredited for specific matrices or analytes.

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.



Cameron Evans

Scientist

Accreditation



Appendix

Analyte LOR Summary

Poly- and Perfluorinated Alkyl Substances (PFAS) in Water - AsureQuality Method (LC-MS/MS)

Analyte **LOR (µg/L)**

Listing applies to samples: 18-213620-5, 18-213620-8

Perfluoroalkylsulfonic acids

PFPPrS*	0.0010
PFBS*	0.0010
PFPeS*	0.0010
di-PFHxS (1)*	0.0010
mono-PFHxS (1)*	0.0010
L-PFHxS (1)*	0.0010
Total PFHxS (3)*	0.0010
PFHpS*	0.0010
di-PFOS (5)*	0.0010
mono-PFOS (5)*	0.0010
L-PFOS (5)*	0.0010
Total PFOS (7)*	0.0010
Sum PFHxS+PFOS (1)*	0.0010
PFNS*	0.0010
PFDS*	0.0010

Perfluoroalkylcarboxylic acids

PFBA*	0.0010
PFPeA*	0.0010
PFHxA*	0.0010
PFHpA*	0.0010
PFOA*	0.0010
PFNA*	0.0010
PFDA*	0.0010
PFUnDA*	0.0010
PFDoDA*	0.0010
PFTTrDA*	0.0010
PFTeDA*	0.0010

Perfluorooctanesulfonamides

PFOSA*	0.0010
NEtFOSA-M*	0.0010
NMeFOSA-M*	0.0010

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA*	0.0010
NMeFOSAA*	0.0010

Perfluorooctanesulfonamidoethanols

NEtFOSE-M*	0.0010
NMeFOSE-M*	0.0010

Telomere Sulfonic acids

4:2 FTS*	0.0010
6:2 FTS*	0.0010
8:2 FTS*	0.0010

Listing applies to samples: 18-213620-1, 18-213620-4

PFPPrS	0.0010
PFBS	0.0010
PFPeS	0.0010

di-PFHxS (1)	0.0010
mono-PFHxS (1)	0.0010
L-PFHxS (1)	0.0010
Total PFHxS (3)	0.0010
PFHpS	0.0010
di-PFOS (5)	0.0010
mono-PFOS (5)	0.0010
L-PFOS (5)	0.0010
Total PFOS (7)	0.0010
Sum PFHxS+PFOS (1)	0.0010
PFNS	0.0010
PFDS	0.0010
Perfluoroalkylcarboxylic acids	
PFBA	0.0010
PFPeA	0.0010
PFHxA	0.0010
PFHpA	0.0010
PFOA	0.0010
PFNA	0.0010
PFDA	0.0010
PFUnDA	0.0010
PFDoDA	0.0010
PFTTrDA	0.0010
PFTeDA	0.0010
Perfluorooctanesulfonamides	
PFOSA	0.0010
NEtFOSA-M	0.0010
NMeFOSA-M	0.0010
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010
NMeFOSAA	0.0010
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010
NMeFOSE-M	0.0010
Telomere Sulfonic acids	
4:2 FTS	0.0010
6:2 FTS	0.0010
8:2 FTS	0.0010

Analyte Definitions

Poly- and Perfluorinated Alkyl Substances (PFAS) in Water - AsureQuality Method (LC-MS/MS)

Analyte **Full Name**

Listing applies to samples: 18-213620-5, 18-213620-8

Perfluoroalkylsulfonic acids

PFPrS*	Perfluoro-1-propanesulfonic acid
PFBS*	Perfluoro-1-butanesulfonic acid
PFPeS*	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)*	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)*	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)*	Linear Perfluorohexanesulfonic acid
PFHpS*	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)*	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)*	Total Perfluoromethylheptane sulfonic acids

Analyte	Full Name
L-PFOS (5)*	Linear Perfluorooctanesulfonic acid
PFNS*	Perfluoro-1-nonanesulfonic acid
PFDS*	Perfluoro-1-decanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA*	Perfluoro-n-butanoic acid
PFPeA*	Perfluoro-n-pentanoic acid
PFHxA*	Perfluoro-n-hexanoic acid
PFHpA*	Perfluoro-n-heptanoic acid
PFOA*	Perfluoro-n-octanoic acid
PFNA*	Perfluoro-n-nonanoic acid
PFDA*	Perfluoro-n-decanoic acid
PFUnDA*	Perfluoro-n-undecanoic acid
PFDoDA*	Perfluoro-n-dodecanoic acid
PFTTrDA*	Perfluoro-n-tridecanoic acid
PFTeDA*	Perfluoro-n-tetradecanoic acid
Perfluorooctanesulfonamides	
PFOSA*	Perfluoro-1-octanesulfonamide
NEtFOSA-M*	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M*	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA*	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA*	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M*	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M*	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS*	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS*	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS*	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
Internal Standards	
M3PFBS*	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS*	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS*	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA*	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA*	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA*	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHpA*	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA*	Perfluoro-n-[13C8]octanoic acid
M9PFNA*	Perfluoro-n-[13C9]nonanoic acid
M6PFDA*	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA*	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA*	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA*	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA*	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA*	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA*	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA*	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA*	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE*	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE*	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS*	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS*	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS*	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid

Analyte	Full Name
Listing applies to samples: 18-213620-1, 18-213620-4	
Perfluoroalkylsulfonic acids	
PFPPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear Perfluorooctanesulfonic acid
PFNS	Perfluoro-1-nonanesulfonic acid
PFDS	Perfluoro-1-decanesulfonic acid
Perfluoroalkylcarboxylic acids	
PFBA	Perfluoro-n-butanoic acid
PFPeA	Perfluoro-n-pentanoic acid
PFHxA	Perfluoro-n-hexanoic acid
PFHpA	Perfluoro-n-heptanoic acid
PFOA	Perfluoro-n-octanoic acid
PFNA	Perfluoro-n-nonanoic acid
PFDA	Perfluoro-n-decanoic acid
PFUnDA	Perfluoro-n-undecanoic acid
PFDODA	Perfluoro-n-dodecanoic acid
PFTTrDA	Perfluoro-n-tridecanoic acid
PFTeDA	Perfluoro-n-tetradecanoic acid
Perfluorooctanesulfonamides	
PFOSA	Perfluoro-1-octanesulfonamide
NEtFOSA-M	N-ethylperfluoro-1-octanesulfonamide
NMeFOSA-M	N-methylperfluoro-1-octanesulfonamide
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA	N-methylperfluoro-1-octanesulfonamidoacetic acid
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M	2-(N-methylperfluoro-1-octanesulfonamido)-ethanol
Telomere Sulfonic acids	
4:2 FTS	1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS	1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS	1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHpA	Perfluoro-n-[1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDODA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid

Analyte	Full Name
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
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DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid

Any tests marked with * are not accredited for specific matrices or analytes.

LOR = Limit of Reporting

LOD = Limit of Detection

NR = Not Reportable

Food and Environmental Submission Form/Chain of Custody

Customer Details

Company Name: * Taranaki Regional Council

Contact Person: * Callum Mackenzie

Email: * callum.mackenzie@trc.govt.nz

Contact Phone No.: * 06 765 7127

Address:

Submission Ref.:

Purchase Order No.: 73494

Contract/Quote No.:

Reporting Details

Report Results To: * sean.hudgens@aecom.com

Extra Copies To:

Report each sample separately? *

If multiple samples are listed below, tick yes to receive an individual CoA for each sample.

☐ Yes

☒ No

Sample Sent By (Name): * Rebecca Joyce Signed By: *

Date/Time Dispatched:

Condition sample(s) dispatched in: ☐ Ambient ☐ Chilled ☐ Frozen

☐ Quarantine (include a copy of the MPI Import Permit/Transfer Form stating country of origin)

☐ Return sample(s) after analysis (Courier fees apply)

NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples? ☐ Yes

Are samples hazardous to health? * ☐ Yes

☐ No

Water samples submitted? * ☐ Potable

☒ Non-Potable

Submission Label



18-212400

AsureQuality Limited

Wellington Laboratory

1C Quadrant Drive, Waiwhetu

Lower Hutt 5010

New Zealand

Tel: +64 4 570 8359

Email: GracefieldSR@asurequality.com

Urgency Details *

☒ Normal Turn-around-time (TAT)

☐ Urgent Service (please select from options below)

☐ Half quoted TAT (50% surcharge)

☐ Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

Sample Name* (unique sample identifier)	Sample Type* (Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)	Sample Description (additional sample information, to appear on report)	Sampled Date (used to determine holding time, if applicable)	Testing Requirements* (test or compounds to be tested for)	AQ Ref. only
QAQC01	Groundwater	Groundwater	21/08/18	DX - PFCS01	
QAQC02					
QAQC03					
QAQC04					
QAQC05			22/08/18		
QAQC06					
QAQC07					

*Required information

Comments/Additional Information:

Received By (Name): * Lauren Mockett

Signed By: *

7:30
23/03/18
14 C

NZ Couriers

LB 09801069